Guidelines, Standards and Procedures for Web Publishing

Note: These Guidelines, Standards, and Procedures may be updated at any time. Please check the IES Members Site for most current edition. If you have any questions regarding these standards, or the policies therein, please contact xxxxxxxx.

In the interest of maintaining a high quality, broadly accessible website for the general public, IES has implemented "Guidelines, Standards and Procedures for Web Publishing" for IES websites. It should be understood that these standards are a living document and that they will continuously evolve over time. Please refer to this site frequently for the latest updates. Whenever a major section is updated the date of that update will be indicated. Additionally, the most recent updates will be highlighted in red to help you identify them.

1.2.8 -	XHTML DOCTYPE Standards	**2.3 - Policies**	Survey Collections		2.0+
1.2.9 -	Secure Sites	2.3.1 -		3.3.3 -	Classic ASP
1.3 - Section 508 and Style Guidelines	Section 508 Technical Standards	2.3.2 -	Publications and Tables	3.3.4 -	JavaScript
1.3.1 -		2.3.3 -	Data File Specifications	**3.4 - Application Development Guidelines**	C# / VB.NET 2.0+
1.3.2 -	Section 508 Tests	2.3.4 -	PowerPoint Specifications	3.4.1 -	
1.3.3 -	ALT and TITLE attributes	2.3.5 -	Excel Specifications	3.4.2 -	ASP.NET 2.0+
1.3.4 -	Colors	2.3.6 -	PDF Specifications	3.4.3 -	Classic ASP
1.3.5 -	Fonts	2.3.7 -	Home Page Data Snapshots	**3.5 - Website Components**	Graphing Component - Corda PopChart, Highwire
1.3.6 -	Style Sheets	2.3.8 -	Data Products	3.5.1 -	
1.3.7 -	Usability Testing	**2.4 - SQL Server Policies and Procedures**	Support / Developer Responsibilities	3.5.2 -	User File Uploads - SAFileUp
1.4 - Content Composition	Header and Footer	2.4.1 -		3.5.3 -	Search Engine - Google Mini
1.4.1 -		2.4.2 -	Connecting to Development Databases using SQL 2005 Management Studio	**3.6 - State Management and Load Balancing**	Cookies
1.4.2 -	External Links	2.4.3 -	Creating and Delivering New Databases	3.6.1 -	
1.4.3 -	Internal Links	2.4.4 -	Updating Database Objects	3.6.2 -	Load Balancing and Server Affinity
1.4.4 -	Website Terminology	2.4.5 -	Transfers Between Development and Production	**3.7 - Application Deployment**	ASP.NET 2.0+
1.4.5 -	Images	2.4.6 -	Database	3.7.1 -	
1.4.6 -	Videos				
1.4.7 -	Unicode				
1.4.8 -	Linking to Staff Contact Information				
1.5 - Search Engine	Title Tags				

IES standards exist to facilitate one or more of the following, in order of importance:-

- **Manageability** (readability, consistency, extensibility)

  IES hosts a large number of websites and custom applications. Standards and processes exist in order to allow IES Support to manage these effectively and efficiently as well as to streamline website updates and changes to applications.

- **Security** (application, network and data security)

  Well-defined security standards help protect data and applications and keep networks, servers and websites secure.

- **Performance** (response time, server load, minimize errors)

  IES websites and applications must be able to cope with expected visitor volumes whilst remaining easily manageable by IES Support and extensible by developers in future iterations.

- **User Experience** (user interface, web standards, accessibility)

  The user's browsing experience is important for website usability. Standards such as XHTML compliance will help ensure the website is correctly displayed for all users.

.

1. Website Standards

All website developers should be familiar with these general standards before beginning any work on IES / NCES websites. Additional standards in Section 3 apply to the many pages on the IES / NCES websites that are served by data-driven, dynamic web applications (written in classic ASP or ASP.NET 2.0/3.5).

1.1 - File and Directory Standards

1.1.1 - Directory Structure Layout

In the interests of reducing maintenance and bringing about directory standardization to the IES / NCES website, individual program areas are directed to break down their web sections into a more manageable directory structure. At a minimum, separate folders must be provided for images, PDF files, data and include files. Any additional files requiring special access or handling should also be placed in their own subdirectory structure. Do not put any of these components inside the root and do not mix files within a subdirectory (e.g. PDFs with .asp pages). **Additionally, the name NET should never be used as a folder name. It is used for other purposes in our environment and as such is a prohibited folder name**. If your site does not follow this structure it will not be moved over to the production area. All DLLs need to be registered in the components directory through the Members site. The default naming convention is as follows:

1. **images** - all GIF, JPG, PNG and SVG images.
2. **PDF** - all PDF files
3. **inc** - all classic ASP server side includes (note that include files must follow naming conventions).
4. **css** - Cascading Style Sheet (*.css) files.
5. **js** - JavaScript / JScript (*.js) files.
6. **data** - all downloadable components. These should be further broken out by: xls for Excel, ppt for PowerPoint, and zip for zip files. Word and text files are not acceptable formats for the website with the exception of text files for record layout documentation.
7. **dev** - old or unused files (these will never appear on the IES / NCES production website)

The directory structure listed above may be repeated as needed in any subdirectories or other applications. For applications sharing a common set of files (e.g. CSS files, icons, etc.), a higher-level directory may be referenced (e.g. *nces.ed.gov/css/* or */common/images/*).

Any files or directories that are not referenced by our website should be deleted or placed in the dev directory. If you choose to use Interdev or FrontPage to create web pages, you will notice creation of several three letter directories preceded by an underscore such as _vti and _ctf. In addition to these, files such as vssver.scc, and _notes which are created by applications but not needed to run web pages will not be moved over to the IES / NCES production web server and **must be deleted** from the development server before a request will be actioned.

Files and folders with the following extensions must never be used in production in any circumstances:

- dev or any variation of development
- old
- bak, or any variation of backup
- test
- copy
- notes
- ftp

If any of these are used they must remain in development. Requests that include such files intermingled with legitimate files will be rejected.
Only necessary files should exist in your website's directories. **Do NOT leave extraneous files or directories in your website**. This includes temporary files and source control marker files.

[Section: 1.1 - File and Directory Standards | Contents]

1.1.2 - File Naming Conventions

Keep all filenames in lower case. Make your filenames intuitive to the people who will be seeing them ("orgchart2000" rather than "oc2k") - this will help make your information easy to search for and find. Try to be descriptive in your file name, but not verbose. One word names are always best, but useless when cryptic.

- Special characters are not supported in file names for the web on our servers. Web names (URL's) should be alphanumeric only (letters and numbers). Examples of Special Characters not supported (this is not a complete list) include: * asterisks, ? question marks, ! exclamation point, and @ at signs.
- Although dashes (-) are recognized by many browsers, you should not use them. Spaces in filenames tend to account for most document retrieval errors. If you need to separate words in a file name, use the underscore (_) character, which is fully supported.
- As a rule use only letters, numbers and _ (underscores). Anything else appearing in a request will be returned for renaming.
- Once a file is named it must retain that name. **DO NOT** change file or directory names arbitrarily. This will result in broken links, as other parts of the site may be pointing to existing files.

[Section: 1.1 - File and Directory Standards | Contents]

1.1.3 - Website Default Document

A default document is the web page that is displayed when a browser request (URL) does not include a specific file name. The IES / NCES web servers search directories for the default document name **Default.aspx** for ASP.NET 2.0+ applications, and **index.asp** for all other applications. All IES / NCES websites must follow this convention. (e.g. http://ies.ed.gov displays http://ies.ed.gov/index.asp)

[Section: 1.1 - File and Directory Standards | Contents]

1.1.4 - Temporary Files

Many applications are developed for the NCES website that make use of the creation of temporary files. These files might include data tables or graphs. Regardless of the content for these temporary files they must all be stored in one central location in the IES/NCES web environment. A folder has been designated called tempfiles in which **all** temporary files must be stored. The path for these temporary files is off the root of the NCES website located at: /tempfiles/foldernameforyourapplication. You cannot place these tempfiles within the web share of a specific application. The tempfiles folder is automatically emptied out twice a day at 7:00 am and 7:00 pm. For help in setting this up please contact Engineering / Network Support.

[Section: 1.1 - File and Directory Standards | Contents]

1.1.5 - File Attributes

IES Support will control and maintain file-level attributes for applications. Therefore, when modifying or uploading files, they **MUST NOT** be set to Read-only or Hidden. Also, do not enable any other of Windows' Advanced Attributes (Archive and Index / Compress or Encrypt attributes) for files. Beware of files copied from source control programs (e.g. Microsoft Visual Source Safe) as these may be set to Read-only when retrieved from source control databases.

[Section: 1.1 - File and Directory Standards | Contents]

1.1.6 - Supported File Types

Standard web content (HTML files, plain text files, JavaScript (.js), Cascading Style Sheets (.css) and images (JPG, GIF, PNG and SVG) are supported as well as PDF files. These other file types are also served and supported by the IES / NCES websites:

- **Active Server Pages (.asp)** - All ASP versions that are supported by Windows 2000 or Windows 2003 are allowed.
- **ASP.NET (.aspx)** - Standard ASP.NET 2.0 or 3.5 content is supported, including user controls and MasterPages, as well as XML WebServices. (.NET) Remoting is NOT currently used (but may be in future).

- **Macromedia Flash (.swf)** - Macromedia Flash is a standard for multimedia playback featuring vector-based images, keyframe animation, MP3-compressed audio, and a host of interactivity elements. The Flash client-side plug-in can perform streaming animation and audio playback. Flash media files are usually assigned the extension SWF and are stored on the server-side (similar to an embedded graphic). Flash can be used on the IES/NCES website after first securing approval from the NCES webmaster for any planned application. However, **a non-flash alternative must accompany any flash application**. **Note**: When using Flash, the <object> must have a *wmode* parameter set to opaque and must also be embedded with the opaque parameter. i.e.

  <param name="wmode" value="opaque" />

  <embed wmode="opaque" src="*movie/movie.swf*" quality="high" pluginspage="http://www.macromedia.com/go/getflashplayer" type="application/x-shockwave-flash" width="0" height="0"></embed>

  This is to prevent Flash objects overlaying over the top of any HTML content (such as the drop down navigation hover menus in the HFS).

- **Microsoft Office (.xls, .doc, etc.)** - Microsoft Office files are allowed.
- **Binaries (.dll, .exe, .ocx)** - With the exception of standard ASP.NET 2.0/3.5 DLLs, the NCES webmaster must approve all binaries deployed within a program area. Furthermore, these extensions must be separated into a Script subdirectory within a site, or, at the webmaster's discretion, moved to the global Script subdirectory. Full documentation (as well as source code) must be provided with the extension describing, at a minimum, what the extension does, why it is needed, and any necessary security precautions. Any custom ActiveX COM/DLL objects require testing on our development server before they can be registered on our web servers.
- **XML and XSLT (.xsl)** - small amounts of non-sensitive data may be stored as XML on the web server. XML Transformations performed using XSLT are permitted.

The following file types are **NOT supported** and may not be used:

- **FrontPage and Interdev Extensions** - These are not loaded on the production server and their use is prohibited. Configuration subdirectories (e.g. vti_cnf) will not be deployed into production websites.
- **ColdFusion, Perl, Python, PHP, CGI** - None of these technologies are supported on IES websites.
- **Java Applets** - For performance, accessibility and security reasons, Java Applets (or any applications requiring the user to have Java Virtual Machine installed) are not permitted on the website. (JavaScript is allowed.)
- **VB Script Files (.vbs)** - All VBScript must be incorporated into ASP pages (.asp).

- **ASP.NET 1.x** - The only versions of the .NET Framework supported are 2.0 or 3.5. No other versions will be installed on IES servers.

[Section: 1.1 - File and Directory Standards | Contents]

1.2 - HTML Composition

1.2.1 - Cross Browser Compatibility

All IES hosted web pages must be accessible, at a minimum, by the following web browsers:

1. Internet Explorer version 6.0 and higher
2. Firefox/Mozilla

For the month of June 2008 the top browser usage breakdown for visits to nces.ed.gov was as follows:

1. Internet Explorer 7 - 43.98%
2. Internet Explorer 6 - 30.24%
3. Firefox 14.21%
4. Mozilla - 3.18%
5. Netscape 5 - 2.57%
6. Safari - 0.56%
7. Netscape 4 - 0.47%
8. Opera - 0.24%
9. Other Netscape Compatible - 0.16%
10. SiteUptime.com - 0.11%

The top platforms for the month of June 2008 were:

1. Windows XP - 68.97%
2. Windows Vista - 11.56%
3. Macintosh - 5.24%
4. Windows NT - 2.52%
5. Windows 2003 - 0.85%
6. Windows 98 - 0.54%
7. Linux - 0.49%
8. Windows Win32s - 0.28%
9. Macintosh PowerPC - 0.07%

For the most recent statistics on browser usage please check the Site Usage reports. When developing pages for the IES website please take advantage of the newer version browsers. If some value-added web features that are only viewable through a newer browser do not work in an older browser, yet the site is still functional using an older browser, then those pages will be accepted.

To help achieve this:

- Write your sites using up-to-date widely supported standards, such as HTML 4.01 or XHTML - avoid using deprecated tags (e.g. <font> <u> <strike>), keep all tags and attributes in lowercase, enclose all attributes in double quotes (e.g. nowrap="nowrap") and close all tags (e.g.
). ASP.NET 2.0+ applications should aim to be XHTML 1.0 Transitional compliant.
- To convey emphasis in content, either use the and tags or use a style (via a tag, for example), instead of <b> and <i> tags. <b> and <i> tags convey only a visual style onscreen and while they may be useful for purely visual elements in certain applications, for general content on the IES / NCES website they should not be used.
- Check client-side (JavaScript) functionality - never use browser specific JavaScript. For example, use *document.getElementById* instead of *document.all*, which is only supported by IE; never use the *const* keyword, which is Mozilla-specific.
- Use existing stylesheets that have been tested for cross browser compatibility.
- Use HTML tables for content requiring tabular layouts, and tags with CSS for other layout only where practical. In many cases, tags may not be practical for layout, especially for cross browser compatibility. Also, to comply with Section 508 requirements, pages should be readable without stylesheets. Using complex layouts may make pages unreadable without stylesheets.

Make use of the W3C Markup Validation Service to validate your HTML, CSS and check for broken links.

[Section: 1.2 - HTML Composition | Contents]

1.2.2 - Screen Resolutions

The IES website is designed for a minimum screen resolution of 800 by 600.
The current screen resolution statistics for users of the NCES home page for example is:

1. 1024 x 768 52.6%
2. 800 x 600 12.2%
3. 1280 x 1024 13.7%
4. 1280 x 800 8.5%
5. 1152 x 864 3.6%
6. Other 9.4%

Horizontal scrolling should not be necessary to view pages at this resolution. Table should not have absolute widths. By default, page widths are set by IES global style sheets. (They do not exceed 750.) This will ensure no horizontal scrolling occurs.

It is not a good idea to have several pages of text on a single web page that forces the user to scroll and scroll and scroll some more. However, if you find that you do have several pages of text then they should be organized in a logical manner with a contents area that

provides headings, links to text (or graphics or data) and a "Top" button following each section. This will permit the user to go directly to their area of interest and then return to the table of contents to continue with their selection. An example of this can be found at: http://nces.ed.gov/surveys/ruraled/Definitions.asp

[Section: 1.2 - HTML Composition | Contents]

1.2.3 - HTML Editors

While IES does not prohibit using any particular HTML editor for creating web pages, it is important to note that no custom FrontPage, Interdev, DreamWeaver, etc. objects nor extensions (such as Search, ImageMap, etc.) will be supported on our site. In addition, you may find that these tools generate extraneous folders such as *vti_**. If you are using one of these editors you must remove such folders from the IES development server. See Supported File Types for a list of allowed files. Some programs used to create or edit HTML (e.g. Microsoft Word, some WYSIWYG editors) will also generate a lot of extraneous code. Beware of these.

An HTML editor that we have found to produce "clean" code is ***Macromedia HomeSite***. You may also use any text-based editor that generates "clean" code.

Note: For ASP.NET 2.0+ web applications, ***Microsoft Visual Studio 2005 or later*** is recommended.

[Section: 1.2 - HTML Composition | Contents]

1.2.4 - DOCTYPE and Encoding Declarations

The first line of every HTML document must be a DOCTYPE declaration (document type declaration). This informs the validator which version of HTML you're using. DOCTYPEs are a key component of compliant web pages: your markup and CSS won't validate without them. For example, for a typical XHTML 1.0 Transitional document:
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

IES webpages should use XHTML 1.0 Transitional as a baseline default, although pages may also be written in XHTML 1.0 Strict. Do not use Frameset DOCTYPEs unless necessary (see 1.2.7 on usage of Frames), and never use older DOCTYPEs (e.g. HTML 3.2).

You must also specify a **specific character set** in addition to the DOCTYPE. A simple technique to mitigate exposure to cross-site scripting attacks is to explicitly declare which character set should be used on your HTML page. If a character set is not explicitly defined, any character encoding may be used and due to the many variations of character encoding, it becomes very difficult to filter out unwanted characters. All IES web pages should use the 8-bit ASCII ISO-8859-1 character set, which would be specified by including this line:

<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
Additional meta tags are used throughout IES websites for search purposes - see the section on Search Engine Optimization - Meta Tags for details.

[Section: 1.2 - HTML Composition | Contents]

1.2.5 - Comments

Use HTML comments only when you need to see the comment in the output HTML. Do not leave comments in any content that is served to the client, especially HTML source. This includes notes, bits of server-side code, and other sensitive information such as user IDs, passwords, file paths, database locations, etc. Sensitive information should only be stored in appropriate server-side files - xxxxx. Basic comments in CSS files or JavaScript are allowed.

[Section: 1.2 - HTML Composition | Contents]

1.2.6 - Pop-up Windows

The following rules apply to any pop-up windows you use:

- Pop-up windows must not include an address line for a URL.
- Pop-up windows must be set to open in the far upper left-hand corner of all browsers. For an example, see the help link on http://nces.ed.gov/nationsreportcard/naepdata/. This requirement fits with the IES standard of center-justified pages, especially for users who are not adept at moving and resizing windows. To create pop-ups that account for Netscape's and IE's varying JavaScript syntax, the screenx, screeny, top, and left parameters need to be included in the *window.open* statement as follows:

  window.open('testpage.htm','myExample6','width=200,height=200,screenX=0,screenY=0, top=0,left=0');

  Using this syntax, Netscape will ignore the top and left parameters and look only at screenx and screeny. IE will do the opposite.

- A "close window" button must be included immediately after the last line of text in the pop-up window.
- DO NOT include the IES / NCES header or footer.
- The correct meta tag MUST be included to prevent the pop-up from being included in site-wide searches. These pages should not be included in any search indexing.
- Include *onload='self.focus();'* in the <body> tag of the html page of the pop-up window to ensure that a pop-up window is not lost behind other windows. You should not put this code in the <body> tag of the page that creates the pop-up window.

  <body onload='self.focus();' vlink="#0000FF" bgcolor="#FFFFF4">

- If you want the user to be able to print from that window, include a print option button.

[Section: 1.2 - HTML Composition | Contents]

1.2.7 - Frames

Designing web pages with frames enables the display of multiple scrollable panels on a single screen. Frames divide web pages into separate regions that can display content independently. However, frames present navigation and accessibility problems. They typically don't work as well on low-resolution screens because the content must be compressed into smaller frames and because they require multiple page loads, they can also increase download time.

For these reasons the **use of frames is not allowed on the IES website**, unless there no other design option exists. These special exceptions must be approved during the pre-design phase by the NCES webmaster before any actual work is done. You may also be asked to provide an alternative accessible non-frames version, both as a default for browsers that do not support frames and as a prominent link users may choose from the frames version.

If a special exception is approved, you must provide context and orientation information to help users understand the elements. This includes:

1. Title each frame to facilitate frame identification and navigation. For example, in HTML use the "title" attribute on FRAME elements.
2. Describe the purpose of each frame and how each frame relates to another if it is not obvious from frame titles alone. For example, in HTML, use "longdesc," or a description link.

[Section: 1.2 - HTML Composition | Contents]

1.2.8 - XHTML DOCTYPE Standards

We are changing our standard doctype from HTML 4.01 to XHTML 1.0 (Transitional or Strict). This DOCTYPE will be required for all webpages on IES.ED.GOV and NCES.ED.GOV by August 13, 2008. Moving to XHTML will open up new coding possibilities, enforce better coding practices, and increase platform compatibility. All pages must be tested and in working order using IE6, IE7, and Firefox version 2 and newer.

Below are the two doctypes you can choose from:

Transitional:
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

Strict:
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
This code must be entered EXACTLY as it appears above.

Changing from HTML 4.01 to XHTML 1.0 will alter or break some visual aspects of some web pages, which will require minor changes to the html code and css styles. In most cases the change to XHTML will have no affect on the look or function of your web pages. We will not require that the XHTML converted pages fully validate to XHTML 1.0, but they do need to render as expected when the DOCTYPE changes.

Specific issues to look out for as you convert to XHTML:

- **Comment tags**
  Comment tags should be rendered as <!--Your Comment -->. Avoid using extraneous comments, and stick to comments that will help other developers identify key pieces of content. For instance, more than 41 dashes in a row, will break webpages in Firefox.
- **Divs falling below content**
  If, on a columned page set with divs, the right column is falling beneath the left column, adjust the div sizes and test in all browsers (hint: avoid mixing set widths with percentage based widths).
- **Centered text**
   tags should not be used in any instance. All webpage text should be set to align left on the body tag, or a div that wraps the content of your page. To center text within the body of the page, please use css.
- **Empty tags**
  Tags should not be left empty, (i.e., if you need a blank cell in a table, <td></td>). All empty tags should have a non-breaking space inserted, (i.e., <td> </td>).

Suggested guidelines for future development of valid XHTML pages:

- ALL documents must have a DOCTYPE declared before the opening <html> tag appears.
- The most common characters that require escaping are &, < and >.Use & instead of &. A common mistake is to have URLs with unescaped ampersands. e.g.,

  Here & There

  instead of: Here & There

- Tags must be closed in the same order they are opened.

  text

instead of: text

Also, block and inline elements must be correctly nested. e.g.,

text

instead of: text

Do not omit tags that are required as part of the tag's definition. e.g.,

use <table><tr><td>content</td></tr></table>

instead of: <table><td>content</td></table>

and

listitem
listitem 2

instead of: listitem<li>listitem 2

- All tags and attributes must be lowercase e.g.,

  <meta name="rating" content="General">

  instead of: <META NAME="rating" CONTENT="General">.

  (Note: the DOCTYPE declaration is not a tag, and must be in uppercase.)

- Attributes must always have a value, and the value must be in double quotes, not single quotes (or no marks at all). e.g.,

  <input checked="checked" />

  instead of: <input checked /> or <input checked='checked' /> or <input checked=checked />

- All tags must be closed. This includes tags that are often left unclosed such as <img>, <input>, <link>, <br>, <hr>, , <meta>, etc.

  e.g., paragraph 1 paragraph 2 instead of paragraph 1 paragraph 2

  In many cases you can use the self-closing tag format for to make it easier: e.g.,

instead of: <img src="test.jpg" height="32" width="32" alt=" ">, and

instead of: <br>. (Note: <br /> is preferred instead of <br/>.)

We encourage you to contact us if you have any questions or problems during the transition period.

For general questions about the XHTML conversion, please contact xxxxxxx.

For questions about specific visual or coding issues, please contact xxxxxx.

Please understand that all pages need to be updated by **no later than Aug 13, 2008**. This means that all pages on IES or NCES development need to be updated to include the XHTML DOCTYPE. Failure to do so will result in loss of access privileges. In most cases the XHTML conversion will require little more than a find/replace of the HTML 4.01 DOCTYPE, and should not require a significant amount of work.

[Section: 1.2 - HTML Composition | Contents]

1.2.9 - Secure Sites

NCES supports 128-bit Secure Socket Layer (SSL) encryption via its two F5 Networks Big IP load balancing servers. To facilitate encryption and server authentication, valid certificates signed by a trusted certificate authority are required. NCES currently owns a VeriSign-issued certificate for the site surveys.nces.ed.gov.

When the client browser is engaged in a secure connection, a small padlock symbol will be visible at the bottom of the browser window. Double-clicking (for I.E.) or clicking (for Netscape) on the padlock will generate a dialog window containing information about the certificate used by the server for the purpose of encryption.

Alternatively, developers can place a seal on any page that is part of the secured site thereby prominently showing that the connection is encrypted and also providing a link to VeriSign's database containing information about the certificate used by the site. The code consists of two parts - a JavaScript part that generates the pop-up window with the certificate information and an HTML part that is inserted into the .ASP file at the location in which the seal should appear. Simply copy and paste the code below into the appropriate area of the .ASP file.

Use the following code to embed the Verisign logo for SURVEYS.NCES.ED.GOV

<script src="https://seal.verisign.com/getseal?host_name=surveys.nces.ed.gov&size=S&use_flash=NO&use_transparent=NO"></script>

1.3 - Section 508 and Style Guidelines

Section 508 regulations cover IT accessibility requirements for Federal agencies and have been in effect since June 2001. Essentially they require that information technology be equally usable by members of the public with and without disabilities as well as Federal employees with and without disabilities. For IES / NCES websites, this means that text labels and descriptors be provided for all graphics or graphical representations, amongst other considerations.

In addition to Section 508 requirements, style guidelines are provided for IES / NCES websites' designs. With IES / NCES websites hosting over 23,000 static pages contained in approximately 75 major directories, these have been created to promote consistency and good design principles through all our websites and must be followed.

You are responsible for the pages on your website. Please check your pages for compliance (see specific details below in this section) and correct them before your next update request.

1.3.1 - Section 508 Technical Standards

These are the standards that apply to IES / NCES websites, taken from **1194.22 Web-based intranet and internet information and applications** of Section 508: -
(a) A text equivalent for every non-text element shall be provided (e.g., via "alt", "longdesc", or in element content).
(b) Equivalent alternatives for any multimedia presentation shall be synchronized with the presentation.
(c) Web pages shall be designed so that all information conveyed with color is also available without color, for example from context or markup.
(d) Documents shall be organized so they are readable without requiring an associated style sheet.
(e) Redundant text links shall be provided for each active region of a server-side image map.
(f) Client-side image maps shall be provided instead of server-side image maps except where the regions cannot be defined with an available geometric shape.
(g) Row and column headers shall be identified for data tables.
(h) Table markup shall be used to associate data cells and header cells for data tables that have two or more logical levels of row or column headers. Defining row and column headers, defining the scope attribute and using ID and header attributes, will make the tables 508 compliant.
(i) Frames shall be titled with text that facilitates frame identification and navigation.
(j) Pages shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz.
(k) A text-only page, with equivalent information or functionality, shall be provided to make a website comply with the provisions of this part, when compliance cannot be

accomplished in any other way. The content of the text-only page shall be updated whenever the primary page changes.
(l) When pages utilize scripting languages to display content, or to create interface elements, the information provided by the script shall be identified with functional text that can be read by assistive technology.
(m) When a web page requires that an applet, plug-in or other application be present on the client system to interpret page content, the page must provide a link to a plug-in or applet that complies with ?1194.21(a) through (l).
(n) When electronic forms are designed to be completed online, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.
(o) A method shall be provided that permits users to skip repetitive navigation links.
(p) When a timed response is required, the user shall be alerted and given sufficient time to indicate more time is required.

More information is available through the link to the Federal IT Accessibility Initiative at: http://www.section508.gov/

This tutorial, written for the Information Technology Technical Assistance and Training Center, funded in support of Section 508 by NIDRR and GSA at Georgia Institute of Technology, Center for Rehabilitation Technology, shows you how to make your web pages accessible and meet Section 508 standards.

[Section: 1.3 - Section 508 and Style Guidelines | Contents]

1.3.2 - Section 508 Tests

All web pages that are submitted for review must at a minimum pass certain tests: http://webxact.watchfire.com/ - Watchfire WebXACT (formerly CAST's "Bobby") is a free online service that analyzes web pages for their accessibility to people with disabilities.

Once you search on your website's URL you will receive a report. Do not be intimidated by the length or the complexity of the report. The first item listed in the report is called Priority 1 Accessibility. Regardless of the results, your web page must not contain any of the first level (those listed above the title User Checks) Priority 1 accessibility errors that can be detected. The most common cause of these types of errors are failures:

- Provide alternative text for all images
- Provide alternative text for all image map hot-spots
- Give each frame a title (frames should not be used on IES / NCES websites)

Sites should also be tested by a text reader such as JAWS.

[Section: 1.3 - Section 508 and Style Guidelines | Contents]

1.3.3 - ALT and TITLE attributes

Note: Although ALT and TITLE are displayed here in capital letters they should always be written in lowercase throughout any HTML document, as with any HTML attribute.

The **ALT** attribute is designed to be an alternative text description for images. It **must be present** for all image elements, Java applets, Flash files, video files, audio files, plug-ins etc. ALT attributes are essential for addressing accessibility issues and satisfying Section 508 requirements for users with disabilities. It may also convince those with their graphics turned off to load the image. The ALT attribute provides context for your images, especially when used for navigation bars, buttons, and other graphical navigational elements. ALT text is displayed instead of the image in text-based browsers like Lynx, and in place of the image if the image is not displayed in most regular browsers.

Use empty ALT attribute text to identify images such as decorative graphics with functional information: *alt=" "* (i.e., quote space quote - do not leave out the space!). Screen readers bypass this empty ALT, cutting down the aural clutter/confusion that a graphic-intensive page may otherwise generate. At the same time visual ALT attributes will 'pop' up, letting a user know where there are design element level graphics. This convention should be used for images that would otherwise be labeled: "left" or "right" or "spacer" or "border" or similar things.

- DO use an English language description such as "picture of boy", or "photo of Secretary Spellings at IES".
- DO use ALT text such as "go to What's New" instead of just "What's New" if the image represents a link.
- DO use, as a minimum, the title of the table or graph as the ALT image for an image that is a table or graph.
- DO limit the length of your ALT texts. If the text description is too long or complicated to go into an ALT attribute, consider first including the text in the page. If this is not feasible, include the text as a link - use both the *longdesc* attribute (with the *longdesc* text being the link) and append a descriptive link (a standard href) after the image as well (since the longdesc attribute is not supported by all screen readers and has no visual representation on most browsers). Using "D" links is not recommended.
- DO NOT use the file name of a graphic (e.g. horishort440.GIF) as its ALT text.
- DO NOT use generic words such as "table" or "graph" for a table or graph's ALT text.
- DO NOT use the ALT text as a pop-up tooltip for images. The TITLE attribute may be used instead (but note that it is up to a particular browser's interpretation of the W3C Specification on how the TITLE text is displayed).
- DO NOT use blank ALT text (*alt=""*) in any situation.

The **TITLE** attribute may be used to include additional descriptive information for most structural HTML elements including links and images. Unlike the ALT attribute, it is not required. TITLE text is rendered as a popup tooltip in many browsers although this is not

part of their specification, and may vary from browser-to-browser. They may also be read as page content keywords by search engine ranking algorithms.

[Section: 1.3 - Section 508 and Style Guidelines | Contents]

1.3.4 - Colors

When designing web pages for the IES website you must use white as a body background color. No other body background colors may be used. This helps provide the IES website with a consistent look and feel. When users are on a site and the site changes drastically in terms of color (as well as other things) they no longer feel they are on the same site and they potentially get confused as to their current location. Non-white background colors make readability an issue, especially with certain computers and resolutions.

The simplest approach to selecting a color scheme is to limit oneself to only 3 or 4 colors (in addition to black and white), using a primarily monochromatic scheme. Choose a base color for the main scheme and find one or two other shades of the same color family to tone with it. Determine whether the selected colors come from the yellows group (generally warmer colors) or the blues group (cooler colors). Make sure that the chosen shades contrast enough to be readable when used as text on top of another shade, or on white. Then select an accent color (as may be used for followed links) from the 'other' group of colors.

Also keep in mind that 5 to 10% of men have some form of color blindness. This can cause difficulties distinguishing between red and green, or between yellow and blue. In rare cases, there is an inability to perceive any colors at all. You are recommended to avoid foreground/background color combinations that would make the text hard to read for people with color blindness.

[Section: 1.3 - Section 508 and Style Guidelines | Contents]

1.3.5 - Fonts

Do NOT use HTML <font> tags to set font properties (in fact, do not use them all). Cascading Style Sheets (CSS) should always be used for visual styles.

- Typeface: use a sans serif typeface, such as Helvetica, Arial, Univers or News Gothic, which is not condensed. Avoid the use of serif (e.g. Times New Roman), novelty (e.g. Old English Text), and display (e.g. Bodoni Poster) typefaces.
- Use medium or bold face type.
- Present body text in initial capitalization. Use all capital letters and italics in headlines only (OK for publication titles as well). Use underlining for links only.
- Aligning text to the left is preferable to center or right alignment.
- When using the CSS *font-family* property, specify several different fonts (we recommend at least 3) in the order you want them accessed in case a user's computer does not have them installed. List specific font family names first (e.g. *arial, helvetica*) and use a generic family name (*sans-serif* is recommended) as the last in your list.

Also note the following font size suggestions adapted from the World Wide Web Consortium:

- Do not specify the font size in pt, or other absolute length units. They render inconsistently across platforms and can't be resized by the browser. Only specify the font size for pages that need a fixed physical size (e.g. print media).
- Use relative length units such as percent or *em*, or, even better, set a base font-size for the document and use absolute size ([xx-small | x-small | small | medium | large | x-large | xx-large]) or relative size ([larger | smaller]) when defining the font size for a particular element within the document.

[Section: 1.3 - Section 508 and Style Guidelines | Contents]

1.3.6 - Style Sheets

All newly developed and updated IES / NCES web pages must use our global style sheets, which will provide the correct positioning and styling of page content. All IES / NCES pages using the latest Header Footer Service (HFS) will automatically link to the correct basic style sheet (main.css). Existing style sheets other than the members site style sheets will be phased out:

ies.ed.gov	http://ies.ed.gov/css/mainstyle_ies.css?v=1.07
nces.ed.gov	http://nces.ed.gov/css/mainstyle2.css?v=1.05
members.nces.ed.gov	https://members.nces.ed.gov/inc/membersstyle.css

Well-written style sheets provide consistency and flexibility with a website's visual design, while adding support for DHTML and other web technologies and are typically cached by a client's browser, increasing performance.

We encourage you to use your own style sheets in your applications, with the following rules: -

1. **Do NOT set global styles in your style sheets**. That is, do not set styles for <a>, <p>, , <input>, etc...
   Don?t use:

   a, a:visited {
   margin-top:6px;
   margin-bottom:6px;
   }

   Instead, use classes:

   a.space, a.space:visited {
   margin-top:6px;

```
margin-bottom:6px;
}
```

2. **Style sheets must not interfere with the display and function of the standard IES / NCES header and footer rendered by the HFS.**
3. All pages must be tested to confirm that the style sheets do not cause display or functional errors in Internet Explorer 6+ and Mozilla Firefox. In addition, we reserve the right to require your pages to function correctly in Safari/Google Chrome and recommend you testing your pages in one of these browsers (display differences such as minor alignment issues will not be enforced for these Safari/Google Chrome).
   Note: Section 508 requires that IES web pages must be laid out so they are readable without requiring any style sheets.
4. All links to style sheets should be inside the <head> section of your XHTML document, not inside the <body> section.
5. You may use one new style sheet of your own per new application, making sure that it does not overwrite any existing site styles. Try to use existing style sheets unless new styles are needed. Multiple applications may share the same style sheets. Do not use separate style sheets for single pages (use inline styles if they will be applied to only one page).

Requests pertaining to content that breaks these rules may not be approved. These rules apply to all newly developed, in-development, or updated web content.

To help you create functional and effective style sheets that adhere to the above rules and are consistent with the IES/NCES websites, we recommend the following guidelines when creating and using style sheets in your web pages: -

- Use tags to lay out your pages as opposed to using tables. Tables should be used for tabular information, not to line up to columns of text.
- Avoid specifically underlining any text. Links and only links should be displayed with underlines.
- Use a consistent naming convention for your CSS classes. In new applications try using a prefix to differentiate your styles from other applications, such as: .dasTitle, .dasBodytext, etc. **Do not use "ies" or "hfs" as prefixes, as these are reserved for IES / NCES class names.**
- Use ID tags for programming purposes only, not in place of a class. IDs should be unique and therefore used for elements that will appear once on a page.

[Section: 1.3 - Section 508 and Style Guidelines | Contents]

1.3.7 - Usability Testing

In addition to accessibility testing, usability tests are useful for all websites - and major new applications in particular. It is virtually impossible to tell how users will react to websites without having them try to perform what is expected of them. One type of

usability test that is currently popular is conducted in a fully functional lab environment with a live site. For each test six to eight users who fit the target population for the website are found. Once the users are found they come to the lab individually and perform a series of tasks with the website. The ability of the website to allow users to easily find them and quickly perform a task is observed and measured. Some of the variables measured are speed to complete a task and accuracy of task completion. The user's overall opinion of the site is also recorded. Issues from each task attempted are recorded and recommendations for addressing these issues are made. IES/NCES has access to a usability lab at the Bureau of Labor Statistics. If you would like to arrange for its use please contact the IES CITO.

[Section: 1.3 - Section 508 and Style Guidelines | Contents]

1.4 - Content Composition

This section covers the authoring and updating of general web content (especially HTML and multimedia). Design Templates for web publications are also available on the Members site. For additional rules and standards specific to sections of the IES websites (e.g. surveys, publications and tables), see Policies. For additional rules governing ASP conventions, please see Classic ASP Coding Conventions.

1.4.1 - Header and Footer

IES has an established standard header and footer that must be included on all pages of the IES website. The header and footer identify all sections of the websites as part of IES and provide common, central points for site navigation and key website features, such as headlines and NewsFlash. **All pages on the IES site must include both the IES header and footer, except those designed to open in pop-up windows. Do not include the header or footer in any pages designed to open in pop-up windows.** Additionally, neither the header nor footer should be placed within a table, nor wrapped within a container table or div.

This content removed for security reasons.

[Section: 1.4 - Content Composition | Contents]

1.4.2 - External Links

In accordance with OMB Circular A-130 *Management of Federal Information Resources* IES has established agency-wide linking policies. Foremost among this directive is the understanding to limit external linking to information or services necessary for the proper performance of IES' functions. All external links must be reviewed periodically to ensure that they remain active or otherwise continue to provide the level of quality (including objectivity, utility and integrity) as intended by IES and expected by users. As such any external link needs to be approved after program staff determines its applicability. Make sure that offsite links are relevant and their review should be part of your standard maintenance procedures (check these links on a regular basis for changes).

You **must use a standard IES exit page to notify users when they are redirected out of the ed.gov domain** via a link.

This content removed for security reasons.

[Section: 1.4 - Content Composition | Contents]

1.4.3 - Internal Links

There are two ways to link internally - relative and absolute. A relative URL (e.g. "../ccd/") specifies one object, but doesn't say what server it's on or what protocol it uses. Those elements are assumed from the page the link was found on. An absolute URL (e.g. "http://nces.ed.gov/ccd/") tells the browser what protocol to use (http) and what server to find the object on (nces.ed.gov). Relative URLs are useful for situations where what you're linking to is part of the same logical site as the page you are linking from. Absolute URLs are useful, and necessary, for linking to outside sites or sites on a different server.

If you build a site with absolute URLs where relative URLs would do, you end up limiting yourself to a more specific structure than necessary. If you have to move your site later, you will have to go through and recode all your links. You may also go up and down directories with relative links by using ".." to represent the directory above the current one. Going down a directory is done by specifying the directory name with no leading "/" .

Note: Do NOT use "../" when using relative links for classic ASP include files.
The following rules apply to all IES internal links:

All links should be coded as relative links. For example a link to IPEDS Cool should be /ipeds/cool/ and not http://nces.ed.gov/ipeds/cool.

Links should **not** include the default document. For example a link to Fast Facts should be /fastfacts and not /fastfacts/index.asp

There is no www in any IES website URL. **Do not** use www in any IES address.

Note: Absolute links may be used when they are dynamically generated by an application (for example ASP.NET 2.0+) as long as they do not enforce a specific structure.

[Section: 1.4 - Content Composition | Contents]

1.4.4 - Website Terminology

It is important for any professional website to use consistent terminology and spelling throughout as a service to its users. The following terms should be used as stated whenever they appear on the IES website. Please make sure you adhere to these conventions, which match the IES print publication standards found in the IES Style Guide.

- CD-ROM (not CDROM or cd-rom)
- database (not data base)
- dataset (not data set)
- disk (not disc)
- data file (not datafile)
- e-mail (not E-mail or email)
- ftp (not FTP)
- home page (not homepage)
- html (not HTML)
- http (not HTTP)
- Internet (when using it as a proper noun only, otherwise internet)
- NewsFlash (not News Flash or Newsflash)
- online (not on-line)
- pdf (not PDF in URL)
- PDF (not pdf when used in a text situation)
- printout (not print out)
- URL (not url)
- Web (when using it as a proper noun only, other wise web)
- webmaster (not web master)
- website (not web site)
- web address not webaddress
- web browser (not webbrowser)
- web page (not webpage)

[Section: 1.4 - Content Composition | Contents]

1.4.5 - Images

The IES website supports graphics in GIF, JPEG, PNG and SVG formats. No BMP, TIF, PSD or other graphic formats will be accepted unless they are pre-approved and a case has been made as to why they are necessary. A catalog of approved icons exists for image files. These must be used universally on the IES website (for both dissemination and for survey operations) by referencing the /icons folder off the root. DO NOT recreate these icons and DO NOT put them in folders that reside in your local shares.

The following summary may help you decide when to use a particular image format:

- GIF (Graphics Interchange Format) is a lossless method of compression. All that means is that when the program that creates a GIF squashes the original image down it takes care not to lose any data. It uses a simple substitution method of

compression. The maximum compression available with a GIF therefore depends on the amount of repetition there is in an image. A flat color will compress well - sometimes even down to one tenth of the original file size - while a complex, non-repetitive image will fare worse, perhaps only saving 20% or so. The major limitation of GIF images is that they are limited to a palette of 256 colors or less. GIFs are ideal for flat color objects, and natural images that contain a fairly narrow range of tones - such as icons. Since the basic palette of a GIF is 256 colors, GIFs are ill suited for handling complex colors and gradients: these nearly always appear banded no matter how carefully you adapt the image. (Try and steer clear of long gradients in general, as they tend to bring out the worst in people's monitors.)

- JPEGs are suited to displaying natural, complex images and support more than 256 colors. Unlike a GIF, a JPEG is always full 24-bit color, so on anything but a 24-bit monitor it will always be dithered by the browser. If you're fairly certain your target audience is 24-bit capable and quality is an issue, then go for a high quality JPEG every time. The images will be smaller than a GIF too. On the other hand, if quality isn't an issue but size is, then go for a lower quality JPEG, as it will be substantially smaller than the equivalent GIF. The trade-off is that you lose the control over the image that GIF gives you: it's less easy to specify colors and the quality can be dire.
  JPEG is a lossy compression method. In other words, it eliminates parts of an image to save space. Depending on how much you want to compress the image the algorithm used by JPEG throws away the less significant part of the data (the smaller curves), which adds less to the overall "shape" of the image. Unlike GIF, you get a say in by how much you want to compress an image. However the lossy compression method can generate artifacts - unwanted effects such as false color and aliasing ("blockiness") - if not used carefully.
- PNG is an extensible file format for the lossless, portable, well-compressed storage of raster images. PNG provides a patent-free replacement for GIF and can also replace many common uses of TIF. Indexed-color, grayscale, and true color images are supported, plus an optional alpha channel for transparency. Sample depths range from 1 to 16 bits. As PNG files as lossless, they will tend to be larger files than an equivalent sized JPEG (but better quality).
- SVG is a platform for two-dimensional vector-based graphics. It has two parts: an XML-based file format and a programming API for graphical applications. Key features include shapes, text and embedded raster graphics, with many different painting styles. It supports scripting through languages such as ECMAScript and has comprehensive support for animation. SVG builds upon many other successful standards such as XML (SVG graphics are text-based and thus easy to create), JPEG and PNG for image formats, DOM for scripting and interactivity, SMIL for animation and CSS for styling. Not all browsers have native support for SVG.

Coding Requirements

ALT text must accompany images to make the image content available to users with text-only or screen-reading browsers. Where possible, it should express the exact same content as the image. At a minimum, the content of all images must be elaborated in the alternate text attribute of the imagetags.

Finally, the following attributes **must be** present for all images; img src and alt. It is highly recommended that you also use height and width (unless you are loading images from a database and the images are of varying sizes), for example:
<img src="Edstats.gif" alt="National Center for Education Statistics Electronic Catalog Web Page." width="91" height="91">
This will help ensure that most browsers (and versions) will load images correctly and without any difficulty in the proper rendering of the web page.

Image Optimization Tips for the Web

Images that contain many different colors and not a lot of text, like photographs, tend to work best as a JPEG. An image of this type tends not to compress very well as a GIF and doesn't look as good as the JPEG, mostly because of the GIF format's 256 color limit. The compression mechanics of a JPEG usually dictate that the more the image is compressed, the smaller the file and the greater the loss in overall quality.

However, images that contain any combination of small text, graphs, tables, small photographs with few colors, large areas of a solid color (no gradients or lots of shading) such as a white background, will most likely work best as a GIF. The GIF format uses lossless compression method, so GIFs generally appear as sharp and clear as the original uncompressed image. To reduce the size of a GIF file, you can try reducing the number of colors in the GIF's pallet. Disabling image "dithering" can also help. Dithering substitutes colors that have been removed with scattered dots of other colors remaining. For instance, dithering can replace a single dark green color with scattered black and green dots to create a perceived dark green color. GIFs often rely on this technique to push the 256-color barrier to create more lifelike images. Adobe Photoshop has tools that allow, via an easy trial and error method, the production of images to best suit your need. The IES website also supports PNGs which more resemble GIFs than JPEGs (but tend to be larger files than GIFs).

All graphics and logos should be anti-aliased to avoid jagged outlines. Anti-aliasing is a graphic design technique that makes objects appear smooth as if they had been printed despite the low resolution of the computer monitor. GIFs generally benefit from this technique; JPEGs do not.

[Section: 1.4 - Content Composition | Contents]

1.4.6 - Videos

The following standards should be used for all video files to be posted on the IES / NCES websites.

- Video frame size (i.e. 320x240) - 320x240 is fine
- Frames per seconds (i.e. 15 fps, 30 fps) - 15 fps will be fine
- Video codec: Spark or On2 VP6 (Flash Player 8 is required to watch On2 VP6) - Include a prompt that allows users without Flash Player 8 to download and install it
- Video/Audio data rate (kilobits per second) - Use 256 Kbps

All video files should be saved in a .flv format, which provides more flexibility for how we display video files. However, there are cases where .swf may be a better option.

Closed captioning is required for Section 508 compliance. In the past, we have both embedded the captions and provided a transcript on the same webpage as the video. All of the video formats support embedded captioning, and the tools to do so are usually free - for example, MAGpie (http://ncam.wgbh.org/webaccess/magpie/) which supports multiple video formats.

Note: The Microsoft .asf video format is an old one, and Microsoft has been using .wmv for quite a few years. IES / NCES has used .wmv in the past (for the http://nces.ed.gov/pubs2003/timssvideo) but Macintosh users may not be able to view .wmv files. The QuickTime format .mov is most commonly used by Macs. Flash video (.swf or .flv) is the format of choice for multiple platforms as it is fully supported by PCs, Macs and Linux. The IES / NCES supported Flash Plug-in 6.0 or newer will allow users to view the videos.

[Section: 1.4 - Content Composition | Contents]

1.4.7 - Unicode

NEVER include raw Unicode characters (glyphs) in IES websites. These may typically be inserted inadvertently when copying and pasting from Microsoft Word or Excel. When raw Unicode characters (for example daggers, mdashes, unicode quotes, etc.) are pasted into applications and asp pages, the data can potentially garble databases, crash applications, and cause pages to be saved incorrectly when used in certain environments or software tools (because of the legacy of 8-bit text ASCII representations in various programming languages and operating systems - many HTML authoring tools in particular are unable to deal with the details of text encodings). Furthermore, screen-readers typically cannot interpret characters when they are raw Unicode. To display Unicode characters, use either the name code (e.g. †) or number code (e.g. §) - refer to a list of Unicode character codes for more.

[Section: 1.4 - Content Composition | Contents]

1.4.8 - Linking to Staff Contact Information

The maintenance of correct contact information on all web pages is essential for any website. Use generic links whenever linking to an individual or staff from a specific survey or program area within NCES / IES is need. For example, link to the CCD staff through the database rather than hard coding all of the information on a page. Likewise,

link to xxxxxx in the same way. Generic links will minimize maintenance of such links. Otherwise you will have to review pages constantly to make sure that namees, addresses, phone numbers, e-mail addresses, etc. are up-to-date.

[Section: 1.4 - Content Composition | Contents]

1.5 - Search Engine Optimization

You can increase the chance that web search engines (e.g. Google, Yahoo, MSN, etc.) will find your pages by tuning the information in your HTML (although sections will be mostly invisible to your visitors). All new and existing IES website pages should follow the following rules.

1.5.1 - Title Tags

Every web page **must** have a <title> tag that contains a brief description of the web page. At a minimum, this should include a product name (if applicable) and a description. Most search engines will recognize titles of up to 70 characters.

The title tag for IES tables and figures should include the full name of the table as it appears on the table itself (these titles will often exceed 70 characters). For example, *"Percentage of 15- through 24-year-olds who dropped out of grades 10-12 in the past year, percentage of 16- through 24-year-olds who were dropouts, and percentage of 18- through 24-year-olds who had completed high school, by race/ethnicity: October 2000."* These title tags for tables and figures are essential for certain search capabilities within the IES website. However, under no circumstances should you exceed 200 characters for a title tag, as this may adversely affect certain browser functions such as 'Send Link To.'

In addition to being displayed by search engines, <title> tag content will also appear when your site is bookmarked (or placed into a favorites folder). Put the unique part of the description into the title tag first. If everything starts with IES, for example, then it will be difficult to tell by the title in search results if that resource is what a customer really wants. Some useful articles that discuss both the importance of title tags and how they should be constructed for maximum impact are:

- How to Use Meta Tags In Search Engine Promotion
- All About Title Tags
- Improve Your TITLE Tags

[Section: 1.5 - Search Engine Optimization | Contents]

1.5.2 - Meta Tags

Your pages will fall into one of the two following categories:

1. Pages that should be indexed for site-wide searches (generally all content pages and all index pages)

2. Pages that should not be indexed for site-wide searches, that is: -
    - all pages that are part of a stepped process (e.g. Build a Table, IPEDS Cool, other data tools, Handbooks with search components) that have an index page and then several pages to work through to complete a search, except for the index page (which should be meta tagged normally)
    - all survey pages (they fit the above criteria)
    - all pop-up windows

Any page which does not fall in the second category falls in the first category and should be indexed using at least two kinds of <meta> tags: **keywords** and **description**. Search engines that support these tags will often use the keywords found on your pages as a method of categorizing your website based on the search engines indexing algorithms (proprietary algorithms which index your website in search engine databases). Therefore, choose keywords that are relevant to your site and avoid excessive repetition as many search engines will penalize your rankings for attempting to abuse their system. Focus on your main keywords and then elaborate further by using synonyms or other related words: search engines give greater priority to the earlier words in your description.

Search engines that support <meta> tags will often display the description meta tag along with your title in their search results. However, because search engines display their results to a user in a limited space, fewer than 20 words are actually displayed. Therefore the first sentence of the description field should capture the attention of a user and the rest should be used to elaborate further. In any case, descriptions must be limited to 200 characters. See this example or view the source of the IES Electronic Catalog to see a current example.

Pages in the second category **MUST** use the following meta tag:
<meta name="ROBOTS" content="NOINDEX">
This will prevent these other files from being included in site-wide searches. NEVER include *keywords* and *description* meta tags for these pages.

[Section: 1.5 - Search Engine Optimization | Contents]

1.5.3 - Top of the Page

In addition to searching the Title and Meta Tags, search engines look for information at the top of web pages, which makes the text near the top especially important. If it makes sense with your layout, include any information such as the title, description, keywords, products, services, acronyms, etc. in visible text near the top of your web pages.

Add alternate text to images, especially title graphics. Since search engines will search text in the top of your pages, the presence of graphics in that area can also have an important effect. Search engines cannot see or interpret graphics, so any content contained in them is lost to the searcher. At a minimum, the content of all images (such as title images) should be elaborated in the alternate text attribute of the image tags. Provide the *alt* attributes for all images (these are also required for Section 508 compliance).

[Section: 1.5 - Search Engine Optimization | Contents]

1.5.4 - Themes and Relationships for Web Pages

Some web pages at IES are essentially smaller websites within the IES site. The Education Finance Statistical Center and the Third International Mathematics and Science Study are two examples. For such websites, Title and Meta Tags should reflect that fact. A title tag might say:
<title>Education Finance Statistical Center (EDFIN) Title I Information Page- funds for lower income or disadvantaged students</title>
This tag mentions the name of the site, the name of the page, and describes it. Unless there's a compelling reason to omit it, all EDFIN pages would be advised to mention Education Finance Statistical Center or EDFIN in their Title and Meta description Tags. Pages that are not part of distinct websites within the IES website should mention that they are part of the National Center for Education Statistics or IES.

[Section: 1.5 - Search Engine Optimization | Contents]

1.5.5 - Popular Search Terms

The following is a list of actual search terms that users of popular search engines, such as Google and Yahoo use to come to the IES website:

- graphs
- schools
- nces
- National center for education statistics
- Private schools
- High schools
- ipeds
- naep
- School districts
- Education statistics
- statistics
- National center for educational statistics
- USA map
- timss
- National assessment for Educational progress
- Educational statistics
- Ccd
- Probability
- Digest of education statistics
- Famous mathematician

[Section: 1.5 - Search Engine Optimization | Contents]

1.5.6 - Title / Meta Tag Example

<title>Electronic Catalog of IES Products (National Center for Education Statistics). Publications and data products.</title>
<meta name="keywords" content="Electronic catalog, library, education statistics library, Education, statistics, data, education datasets, data access tools, surveys, working papers, education information, education indicators, elementary secondary and postsecondary education">
<meta name="description" content="Product information and search tools. Find information, locate, learn how to order, and browse the content of IES publications or download data files. IES publishes The Condition of Education..., and Projections of Education Statistics ... each year.">
<meta name="rating" content="General">
<meta name="ROBOTS" content="ALL">
<meta name="DC.Title" content="Electronic Catalog of IES Products (National Center for Education Statistics). Publications and data products.">
<meta name="DC.Description" content="Product information and search tools. Find information, locate, learn how to order, and browse the content of IES publications or download data files. IES publishes The Condition of Education..., and Projections of Education Statistics ... each year.">
<meta name="DC.Publisher" content="National Center for Education Statistics">
<meta name="DC.Language" scheme="RFC1766" content="EN">
For a quick meta tag generator see AnyBrowser.com.

[Section: 1.5 - Search Engine Optimization | Contents]

2. Policies, Procedures and Resources

This section details the systems environment used for NCES / IES web servers and the processes available for deployment and updates from development and production environments, using the Members Site https://members.nces.ed.gov/. It also covers policies for particular applications and file types and provides information on available resources and points-of-contact.

2.1 - Environment

2.1.1 - Systems Environment

All developers need to have a sound understanding of the server configurations in both our development and production environments. To facilitate this understanding we have developed a description of the IES/NCES production and development web and database servers. This IES Server Configuration description is available for your convenience as a PDF file (48kb). IES operates on HP Proliant servers running Microsoft Windows 2000 Advanced Server and Windows Server 2003 Enterprise Edition. All service packs and hot fixes are screened by the Department's Office of the Chief Information Officer before

being deployed. Taking this process into consideration, IES/NCES strives to keep its servers as up-to-date as possible.

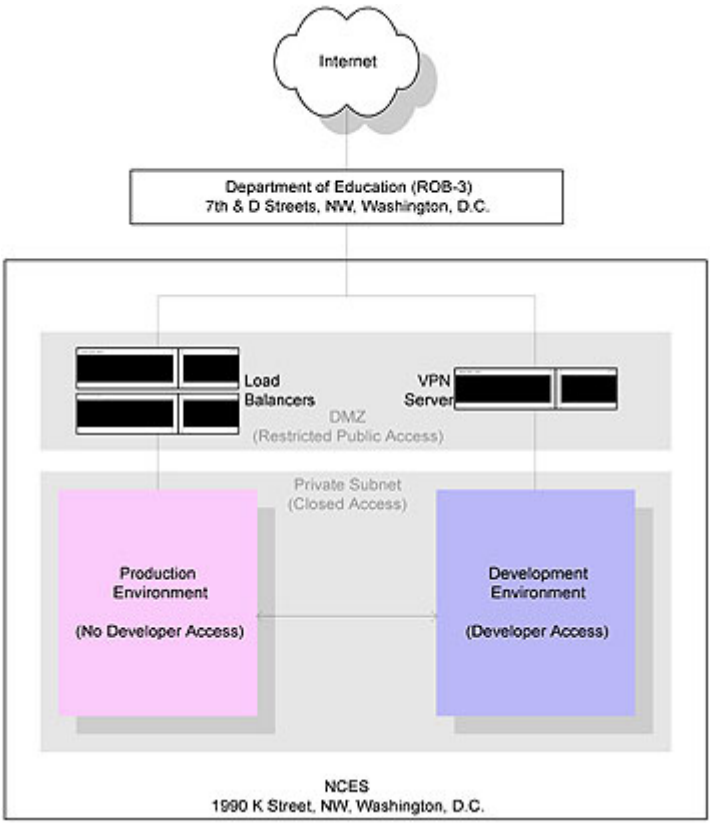
All Windows 2000 web servers support Active Server Pages (ASP) 3.0 on Internet Information Services (IIS) 5.0. All Windows 2003 web servers support Active Server Pages (ASP) 3.0 on Internet Information Services (IIS) 6.0. Microsoft's .NET Framework 2.0+ has also been deployed for certain applications and many future applications will be hosted on this platform (older or beta versions of the framework including 1.x, 2.0 beta and 3.0 versions are NOT supported). Database servers are currently running either Microsoft SQL Server 2000 Enterprise Edition or Microsoft SQL Server 2005 Standard Edition.
Note: The IES/NCES environment is domain-based with two Windows 2003 Server Active Directory domain controllers. All IIS servers are part of this domain and all SQL servers are off the domain and in a separate DMZ subnet.

All ongoing development efforts on IES/NCES servers require access to the IES/NCES DMZ via a VPN connection. Once such a connection is established, access to the development servers is possible via their respective IP addresses.

Note: Servers can have multiple IP addresses! The IP address used to connect to a file share on a particular server is not necessarily the same IP address used to browse a website hosted on that server. For example, to access file shares on the development web server xxxxxxxxxxx the IP address xxx.xxx.xxx.xxx is used. To browse the development version of nces.ed.gov on that server the IP address xxx.xxx.xxx.xxx is used.

For a complete mapping between development servers, shares, and websites download the IES/NCES development server configuration as a PDF file (48KB).

Environment Concept:



Note: IES / NCES webservers are load balanced. This has implications on state management techniques you may use for your web applications.

[Section: 2.1 - Environment | Contents]

2.1.2 - Backups and Disaster Recovery

IES / NCES produces incremental daily and full weekend backup tapes for both our production and development environments. These tapes are shipped Monday to Friday to a secure off-site location. In the event of a disaster the Department of Education has a fully functional Disaster Recovery Facility (DRF) in another region of the U.S. If necessary IES / NCES can restore production operations through that facility.

[Section: 2.1 - Environment | Contents]

2.1.3 - Passwords and EDNet Security Controls

The following password and User ID policy applies to all Department of Education / IES technology equipment and resources and will be enforced, be it for a laptop, desktop, login for the Members Site or web development access. This policy also applies to all web-based applications, including survey operations.

Under no circumstances may any user (staff, contractors or clients) share their work-related login information (i.e. User IDs and passwords) with others including co-workers, contractors and clients. If more than one person needs access to a machine an additional user profile can be created for that machine. You may not provide clients or contractors

with your User ID and password for the Members Site to allow them to enter publication information for you or to request equipment for you. You must do it yourself.

- All passwords must be at least eight characters, but no more than 14 characters and cannot contain your user name or any part of your full name. Additionally, do not use a real word or a significant portion of any real word. These are easily cracked by password cracking software, which IES employs and runs on a periodic basis.
- Passwords must contain a mixture of alpha and numeric characters, upper and lower case letters, as well as special characters as noted below. At least one character from each category must be present.
- The password must not match or resemble the word 'password' in any form (as-is, capitalized, or adding a number, etc.).
- The password cannot contain the same string as your UserID nor may it contain your name.
- The password cannot be a dictionary word in any language.
- If you do not follow the guidelines below, you will receive an error message telling you that your password change attempt has failed. If you receive this error message, try changing your password again using the guidelines below.

  Passwords:

  - must be changed every 60 days.
  - cannot be repeated within six 60-day periods.
  - must contain at least one English upper case character (A, B, C, ...Z).
  - must contain at least one English lower case character (a, b, c, ...z).
  - must contain at least one Westernized Arabic numeral (1, 2, 3, ...9).
  - must contain at least one Non-alphanumeric ("special characters") (%, @, #, &, $,!...*).
- Do not lend or divulge your password to anyone, including individuals purporting to be system administrators.
- Never make your password visible on a screen, in written form (e.g., on sticky notes).
- When you leave your computer unattended, you must either log out or invoke protection of your system (e.g., a password-protected screensaver).
- Avoid using the "remember password" feature.
- Examples of Valid Passwords and why they are correct:

  Knxg12Qplwb* (contains all 4 types and is 8 characters or more)
  Knxg&Q8plwb3 (contains all 4 types and is 8 characters or more)
  MyD@wgSkrz90 (contains all 4 types and is 8 characters or more)
  G0JTF1$H1Nag (contains all 4 types and is 8 characters or more)
  Ort2Pranza%T (contains all 4 types and is 8 characters or more)

- Examples of Invalid Passwords and why they are incorrect:

JohnSmith (contains your name; too few character types)
JaneSmith13* (contains your name)
emjsmith66 (contains a user name; too few character types;)
fido (not enough characters; too few character types)
T42&24T (not enough characters or types)
Latedinner@1 (contains real words)

Members Site passwords can only be changed on the Members site. They cannot be changed when you log in through a VPN connection. Attempting to change your password at a VPN log-in can result in your account being locked. Additionally, if you are mapped to shares or databases when you reset your password you will have to re-map once the password has been changed.

Remember, it is unlawful to share your personal ID and password with anyone for any reason. This has come up time and again through our various audits by both the IG's office and external sources. The specific reference is: 18 U.S.C. ?1030 Section (a)(6)(B)

(6) knowingly and with intent to defraud traffics (as defined in section 1029) in any password or similar information through which a computer may be accessed without authorization, if (B) such computer is used by or for the Government of the United States;

Additionally, according to The Department of Education's EDNET Rules of Behavior:

> *User IDs and passwords are for your individual use only, and are confidential Department of Education information.*
>
> *You must not disclose your password to anyone and you must take the necessary steps to prevent anyone from gaining knowledge of your password.*

To re-iterate: only the user to whom the account is assigned may use that account to access IES / NCES resources. Multiple users **may not share** a single account.

Compliance with the password policy is mandatory. Department personnel who are found non-compliant with this policy may have their access to the Department's IT systems and data revoked and be subject to disciplinary actions. Contractors found not to be in compliance with this policy may have their access revoked, may be required to agree to supplemental conditions of the contract, or may be forced to stop all work in support of the Department.

According to EDNet-POL-000-0128, Policy for Use of Laptops on EDNet, the following applies:

The purpose of this policy is to document the rules by which laptop computer equipment may be safely utilized on the Department of Education's Network Infrastructure (EDNet). This policy is necessary to address the security risks posed by equipment that can connect to EDNet in a wireless mode and/or be unplugged from EDNet and plugged into another

Internet connection. Once outside the EDNet environment, such equipment may become infected or compromised and then threaten the network once it reconnects within the EDNet firewall. This policy protects the Department, its employees, and contractors from inappropriate laptop use that exposes the network to these risks. It is the responsibility of every EDNet user to know these guidelines and to conduct their laptop computer activities accordingly. Among other items this policy states "Only ED-owned laptops are permitted to access EDNet." This should be followed in all circumstances for personal laptops and laptops of contractors who might be working or demonstrating something within the EDNet environment.

This includes that all Laptop equipment operated on EDNet must comply with all regulations and requirements that apply to desktop equipment. Laptop equipment must meet the same minimum configuration guidelines for desktop equipment set out in the Product Support Plan. In addition, no laptop may connect to the network without prior verification by the OCIO staff that it complies with the Information Assurance Security Policy Handbook.

Please don't put IES in a compromising position. Our audits are serious business, as is all security related to government computer systems. We are very diligent about this.

[Section: 2.1 - Environment | Contents]

2.1.4 - NetBIOS

Currently, the IES / NCES website infrastructure uses NetBIOS (Network Basic Input/Output System) traffic to authenticate users against the domain database, to upload files to network shares, and to allow developers to access file shares via a terminal server session through the Firepass VPN. Due to security concerns with NetBIOS traffic, IES / NCES plans to redesign the infrastructure in a way that greatly mitigates the risks of NetBIOS traffic. This is an ongoing and lengthy process. However, with an eye toward the future, all new applications to be hosted at IES/NCES and any major upgrades to current applications must be designed to function **without the use of NetBIOS**, as this traffic will not be allowed to traverse firewalls in our DMZ. If there are uncertainties about what functionality requires NetBIOS, please contact xxxxxxx.

[Section: 2.1 - Environment | Contents]

2.2 - System Procedures

2.2.1 - Kick-off Meetings

ALL IES / NCES web projects require a kick-off meeting. There are no exceptions. For NCES website activities attendees at this meeting must include the NCES Web publisher, NCES webmaster, and developers (outside contractors and/or NCES staff). For IES web activities the IES Web Liaison, the IES lead web coordinator, developers, and the IES CITO must be present. There are several areas that will be covered during the course of this meeting. These include:

- Provide developers information about IES / NCES policies and standards and the IES / NCES web environment. This communication is necessary to ensure that the outside contractor understands IES / NCES standards and the target host production and development environment for the website
- Decide on the URL for the proposed site. The naming of the URL will coincide with the directory structure of ies.ed.gov and nces.ed.gov. DO NOT ASSUME ANY URL YOU WANT CAN BE PROVIDED.
- Ensure a common understanding of the project, the technology to be used for the project, the work required of all parties, and the roles and responsibilities of all parties during development and after the project goes live.
- Establish a project schedule, including a target completion date and a quality control test/acceptance process. Remember these are only target completion dates. These dates are NOT TO BE USED in any advance publicity about the website. There is no guarantee that the website or application will actually be available on any given date. If you publicize a release date you do so at your own risk. The website or application will go "live" when all technical and programmatic standards and considerations have been satisfactory completed, and not before.

There are many subtleties involved when developing a web application that will be hosted in a web environment other than your own. When migrating web pages and applications from an outside developer's test environment to the IES / NCES development, and ultimately production site, all developers must typically invest significant time in reviewing and adjusting their code and markup to work effectively and efficiently in the IES/NCES web environment.

[Section: 2.2 - System Procedures | Contents]

2.2.2 - VPN (Virtual Private Network) Access and Passwords

Account Sign-Up

All individuals needing access to the IES Members Site and the IES / NCES development resources including development web servers and development database servers, must have their organization's designated Web Administrator complete a VPN account request. This request must be made through the Members Site. Each request, once submitted will be approved, denied or returned with comments. If approved, the Web Administrator will receive an e-mail for each approved request with the user's username and resources to which they have access. It is the responsibility of the Web Administrators to forward this information to all users. The user will receive a separate e-mail containing a randomly generated password that meets the stringent security requirements of IES and the Department of Education. Users must then change their password through the Members site.
Note: Passwords cannot be changed through the VPN connection.

All users will be assigned usernames according to the following format:

- NCES employees: er(first letter of first name)(entire last name)

- IES (non-NCES) employees: es(first letter of first name)(entire last name)
- Contract Developers: zz(first letter of first name)(entire last name)
- IES/NCES Consultants (those not part of another contract organization): ez(first letter of first name)(entire last name)
- Other Dept. of Education employees: es(first letter of first name)(entire last name)

As usernames are changed by IES support staff to conform to the above standards users will be notified.

Accessing IES/NCES Resources

The assigned username/password combination constitutes an account in a Windows 2003 domain with Windows 2000 member servers. This account is used to access the IES Members site via IIS authentication as well as IES/NCES development servers via a VPN connection. It is different from a U.S. Department of Education EDNET account.

Note: IES/NCES uses F5's Firepass Remote Access Solution to connect to Microsoft's Windows 2003 Terminal Services for VPN access. This is accomplished by connecting through a browser to xxxxxxx. Details regarding how to configure your individual system for VPN access are available in a configuration document for Windows Operating Systems using Microsoft Internet Explorer (2.3 Mb PDF). If you need additional help connecting to the IES/NCES Firepass VPN after reading the instructions please contact xxxxxxx.

Passwords

New users will automatically be assigned a randomly generated password that meets the stringent security requirements of IES and the Department of Education. Users must then change their passwords by following the instructions through the Members site.

Note: Accounts are locked after three unsuccessful login attempts. If a user becomes locked out they will need to contact xxxxxxx to have their password reset. The IES Internet Support Team does not have access to the actual passwords and will e-mail a randomly generated password to the requesting user. Due to heightened security concerns and as required by the Office of the Inspector General of the U.S. Department of Education, any request to reset the password of a user account must be made in writing (e-mail is sufficient) by the person who owns the account. Proxy requests cannot be accepted. To expedite reset requests by e-mail the sender's e-mail address should be the same as the e-mail address currently on file for the user.

The IES/NCES VPN solution will allow you to connect to IES/NCES development database servers by using Microsoft Enterprise Manager from your desktop or from the terminal server. You will also be able to access web shares on IES/NCES development web servers to do development work or to view development websites. Adobe Acrobat, Microsoft Word, Powerpoint, and Excel are all available through the terminal server for your use.

If a user's contact information changes, the user must notify their designated Web Administrator to have his/her account information updated. Users who cannot be reached via e-mail or phone will have their account disabled. Web Administrators are responsible for making updates to user information and share access and requesting VPN account deactivation once a user is no longer assigned to an active IES/NCES project.

[Section: 2.2 - System Procedures | Contents]

2.2.3 - Access Requests

All requests for space on the IES / NCES development environment (web and database) must be cleared through the request mechanism on the Members site. After approval, you will be contacted with the necessary information such as the name of the directory to which you will be able to map a drive, for example:

\\ xxx.xxx.xxx.xxx **YourDirectoryShareName**.

When requesting space, the following information will be asked:

- Who needs access to the directory?
- The access rights being requested (read only access rights to web shares is not an option)
- What name would you like to give the directory? (this will not automatically be given)
- Provide your name, e-mail, phone, the program area the directory is for, and the contractor name

[Section: 2.2 - System Procedures | Contents]

2.2.4 - Web / Database Updates Requests

All requests for web or database updates must follow the following procedure:

1. All content has been examined and approved by a designated NCES web publisher.
2. In the case of all new content or a major redesign effort the web publisher has cleared it with their Associate Commissioner.
3. In the case of a data access tool the NCES Chief Statistician must have cleared all data.
4. When the official request is prepared it must contain all technical specifications (e.g. files to be moved from the development site to the production site **and those files to be deleted from the production site**) and a brief description of the nature of the update. Any requests not containing information about the files to be deleted from production (or stating that the new files will replace those of the same name, or that these are new files) will not be approved until such information is forthcoming. This is necessary in order to keep unwanted files

from cluttering up, and potentially interfering with the intended operation of our production site. Do not ask for complete replacement of directories if they contain *dev*, *old*, *backup*, *notes* or items such as those.

5. The designated web admin from the developer organization or the NCES web liaison makes an official request through the Members Site at https://members.nces.ed.gov. Requests can be made by either the designated NCES web liaison for a division or the admin designees for the organization doing the web development. These update requests then become part of a database that serves as an official repository of web requests. **Before submitting your request for review please make sure it complies with all published IES website standards.** When submitting a request that involves moving items from development to production, for either web shares or databases, the Members Site will activate a pop-up window containing a web checklist. You must complete this short form before a request will be processed.

If the request concerns a new application, new website, or complete revision of an existing website the initial review should take no more than 3-5 working days (often quicker) after which time the request will either be approved or returned with comments. If you would like to expedite the review please notify the NCES Webmaster in advance so that a scheduled review can take place.

Once a request is approved (this means after all issues have been addressed and it complies with standards), the following will apply:

- Approved web requests will have priority over all but the most essential network engineering work. However, if pressing issues such as server downtime or security breaches exist, they will assume top priority.
- Web requests for surveys that are currently in the field (operational) will be completed soon after approval.
- Database requests that are approved in conjunction with share requests will be done first. By doing it in the reverse order we would create the potential for non-functioning applications on our site. Should your request have more than one part you must include that in your write-up. For example, state "request 1 of 2", "request 2 of 2".
- Typically, requests that are approved by 1:00 p.m. Monday through Thursday will be completed that same day. Other requests will be completed as time permits during the rest of the day. For certain operational activities or projects with high visibility, the NCES Webmaster may add a comment to the approval notification indicating that the request should be prioritized. In this case the request will move to the top of the queue.
- No requests will be implemented after 2pm on a Friday or a day before a holiday, or after 4pm Monday through Thursday, unless the request:
    - addresses an error with a survey in the field
    - fixes a broken application
    - involves the creation of shares or databases
    - involves the creation of a new VPN account

- involves granting share or database permissions.

This gives us time before a weekend or other closing time to verify that a request has been implemented correctly and does not adversely affect our systems.

[Section: 2.2 - System Procedures | Contents]

2.2.5 - Renaming / Moving Files

All moving or renaming of files must be approved by the NCES webmaster. To have files moved or renamed, send an e-mail to the webmaster with the full path of the old and proposed new files. If your request is approved, the webmaster will create a universal redirection command for the file. DO NOT place an empty html redirection file where the old file used to be as this leads to a cluttered directory.

[Section: 2.2 - System Procedures | Contents]

2.2.6 - Staff Directory

All updates to the IES / NCES Staff Directory to appear on the IES / NCES website must be entered into our database before they can take effect. Updates are to be submitted through the Members Site by individual IES / NCES staff. The Staff Directory contains locator information, survey / program areas worked in, topics covered and other useful information to our customers. All instructions and information needed for this submission are available once you select the "My IES Staff Info" option.

[Section: 2.2 - System Procedures | Contents]

2.3 - Policies

2.3.1 - Survey Collections

IES conducts many surveys on the web using dedicated servers and owns a VeriSign-issued certificate for the site surveys.nces.ed.gov. Please use this certificate and prominently place it on the home page for all surveys being conducted. For ALL survey pages the correct meta tag information must be included in order to specify the correct text encoding and prevent search engine indexing. Additionally, the following information **must** be clearly visible in the content of these surveys on the survey home page:

- National Center for Education Statistics
- U.S. Department of Education
- the OMB clearance number
- the clearance expiration date

The burden statement must also be present (unless the respondents received an advance letter - although it is good practice to include it here as well). The burden statement is: -

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this information collection is xxxx-xxxx. The time required to complete this information collection is estimated to average ____ hours (or minutes) per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this survey, please write to: U.S. Department of Education, Washington, D.C. 20202-4651. If you have comments or concerns regarding the status of your individual survey, write directly to: U.S. Department of Education [insert program sponsor/office and address].
Note: State Management standards apply to all IES websites, including survey collection systems. Be particularly aware of these when designing / developing survey collection systems.

[Section: 2.3 - Policies | Contents]

2.3.2 - Publications and Tables

All products and publications must be entered into our database so they can be referenced through the NCES Publications and Products Search. Publications are submitted through the Members Site by NCES staff, typically the author or NCES contact for the publication. All instructions and information needed for this submission are available once you select the "Submit a New Publication" option. In addition to completing the web publishing form the author needs to deliver the PDF and any other files to the NCES webmaster (via e-mail or CD). Also:

- In cases when it is necessary to issue revised reports, and those minor revisions are incorporated into a new PDF file for a web release those publications must carry the original NCES number followed by "rev" (e.g. 2005338rev.pdf).
- When submitting PDF files for publications you must make sure that they comply with all IES standards for graphical presentations of publications (PDF 957KB). These standards include a template for cover design as well as title page and back of title page.
- When submitting .asp files for an html version of the publication you must follow the published web standards for publications (Word document).
- Footnote references in publications and tables should be reciprocal. When there are multiple references to a particular footnote, the link back up should be to the first occurrence of the superscripted reference. For an example, see this Expenditures table

Many IES publications contain several data tables/figures. It is important that these tables be accessible on the IES website through the IES Quick Tables and Figures application. In order for this to take place, tables in publications need to adhere to the following database requirements. All tables require the following <meta> tags to be compatible with the Quick Tables search.

<meta name="keywords" content="quicktable">
<meta name="qttitle" content="Table Title">
<meta name="qtsource" content="Source Name">
<meta name="qtyear" content="####">
<meta name="qtstatcat" content="Topic Area">

- The keywords meta tag must be included exactly as written.
- The content attributes of the qttitle and qtsource meta tags must be strings of 500 characters or less.
- The content attribute of the qtyear meta tag must only be a single 4-digit year (e.g. "2000").
- The Topic Area content attribute of the qtstatcat meta tag must be one of the following values: Assessments, Early Childhood, Elementary/Secondary, International, Library, Postsecondary, or References/Other.

Example:
<html>
<head>
<meta name="**keywords**" content="**quicktable**">
<meta name="**qttitle**" content="**Percentage of young adults, by participation in unpaid volunteer or community service activities, motivation for participation, and select student characteristics: 1990-92**">
<meta name="**qtsource**" content="**National Education Longitudinal Study of 1988 Eighth Graders**">
<meta name="**qtyear**" content="**1992**">
<meta name="**qtstatcat**" content="**References/Other**">
<title>Percentage of young adults, by participation in unpaid volunteer or community service activities, motivation for participation, and select student characteristics: 1990-92</title>
</head>
IMPORTANT: All of the tables must be accessible by the Google indexing engine via a standard web link (example: Table 1.1). If the tables are accessible only via a form or some other method that cannot be indexed by the search engine, then index page(s) containing standard links to all of the tables may be necessary.

On a related note, when creating a title tag for tables and figures **do not** include terms such as Table 1 or Figure 12. For a search to achieve maximum effectiveness it is important for the search engine to search on what the table is actually about and not often used generic terms such as table and figure. Including terms such as those reduce the effectiveness of searches.

Custom Quicktable Search
It is possible to develop a custom quicktable search form to allow queries specific to a particular publication, from within the publication website. The following querystring values can be passed to the quicktables results.asp page:

srchkeyword	Search string (optional)

topic	Only one of the following values: Assessments, Early Childhood, Elementary/Secondary, International, Library, Postsecondary, or References/Other. (optional)
year	Year of table. Multiple values allowed. (optional)
sitesearch	The base URL of the tables to be searched, such as the root of the publication
returnurl	URL to return to publication (optional, null value will default to sitesearch URL)
sitename	String that is used as the title of the return url link on top of the Tables/Figures results page.
othermeta	Filter for custom metatags. (optional) • Metatags and values are paired with a colon(:), example: metatag1:value. • Multiple metatag/value pairs are joined by a period(.), example: metatag1:value.metatag2:value2.metatag3:value3. • Multiple values for a single metatag are joined by a pipe(|), example: metatag1:value1|metatag1:value2|metatag1:value3 **Note**: custom metatags are spidered nightly from the production websites only. Tables in development will not appear in the tables and figures search. This is why it is suggested that new publications with tables using this feature rollout the custom search portion at a later date. This will ensure the tables have been spidered, and are available to query.

Example:

http://nces.ed.gov/quicktables/result.asp?**SrchKeyword**=experiencing&**topic**=Elementary
%2FSecondary&**year**=2000&**sitename**=Indicators%20of%20School%20Crime%20and%20Safety:%202005&
sitesearch=nces.ed.gov%2Fprograms%2Fcrimeindicators&**returnurl**=nces.ed.gov%2Fprograms%2F
crimeindicators%2findex.asp&**othermeta**=rating:general
Note: When using the othermeta field, it may be necessary to create a redirect page for the custom search form to submit to before passing the values to http://nces.ed.gov/quicktables/result.asp.

[Section: 2.3 - Policies | Contents]

2.3.3 - Data File Specifications

A file description and record layout must be provided for all data files. The file information/metadata header must include: the title of the survey (Survey name, part, and year as applicable), the name(s) of each file, the year of the data (not when it was

collected), logical record length (in positional files) or number of variables on the file (delimited files), the number of records per case or observation, and the number of cases in the data file. For delimited files, also include the delimiters (e.g., comma, space, etc.). For each variable on the file, the file description must include: variable name, data type (alpha or numeric), the record (if multiple records per case) and record position (beginning-end, or variable number if delimited) within the record, field length, and variable label.

All data files that are to be released on the IES / NCES website shall be released in ASCII format. In addition a single record type should be used and logical record lengths must be constant. Each record must also contain a unique identifier such as ID. In addition, these ASCII files may be delivered in a delimited, text quoted format that is importable. Documents should be limited to 65 characters for each line.

Products can be delivered in formats other than ASCII however **ASCII is the minimum standard that must be delivered**. Other formats will be accepted including: Excel (spreadsheet), Access (database), SPSS and SAS. In cases where these additional formats (or others not listed here) are delivered the version must be clearly stated. This is especially important in the case of versions of SPSS and SAS (either when the database or just control cards are submitted).

[Section: 2.3 - Policies | Contents]

2.3.4 - PowerPoint Specifications

The following policy must be followed for PowerPoint presentations as they relate to the IES / NCES website and Section 508 accessibility standards.

Create web pages out of each slide by making each slide an image and also provide a text alternative for every page. The slides (iamg tags) should have ALT and TITLE attributes. Ideally, they should also provide a link to allow users to download the entire PowerPoint presentation (*.ppt) if they so desire. This link should then be accompanied by a link to:

http://nces.ed.gov/help/techissues.asp#useful
where users can then access a free viewer for PowerPoint 2003 (for versions 97 and later) if they need one. By adding that link and having alt tags PowerPoint presentations meet the required accessibility standards.

[Section: 2.3 - Policies | Contents]

2.3.5 - Excel Specifications

The following is the IES policy on Excel files that are hosted on any part of the IES website. Currently all Excel data files on the IES website are on the NCES website so the following specific references to NCES will be modified in the future to include reference to other IES Centers and for IES in general. NOTE: in an effort to more closely align with current print standards ease of conversion to an online format, font size ranges have been introduced as shown below.

- All Excel files should start with the approved NCES header. The NCES header is defined as:
    - Font Face: Impact
    - Font Weight: Bold
    - Font Size: 16
    - Wording: National Center for Education Statistics

- Below the NCES header, the title of the data table should appear with the following attributes:
    - Font Face: Arial
    - Font Size: 9 - 10 *(range available)*

- Search Criteria that were used to create the data (if applicable) should adhere to the following style:
    - Font Face: Arial
    - Font Size: 7.5 - 9 *(range available)*

- Any additional information on the data table, such as a subtitle, should adhere to the following style:
    - Font Face: Arial
    - Font Size: 9 - 10 *(range available)*

- The title/subtitle should be followed by the data table which should adhere to the following styles:
    - Column Headers: Arial/8 - 9 *(range available)*
    - Data Cells: Arial/8 - 9 *(range available)*
    - Footnotes or Disclaimers: Arial/7.5 - 9 *(range available)*

- If tabs are used at the bottom of the page, they should be named logically and all unused tabs should be deleted.

- Blank rows may be used for spacing purposes.

- Source and footnotes (footers) should ideally be one row of merged cells the length of the table itself. (Each item in the footer may be in a separate row.) Use text-wrap and adjust row height as needed to fit text into headers and footers.

An example of the aforementioned font styles can be found by searching for public schools. Once you receive search results, export the results to an excel file as a style reference guide.

Note: If the header names and footer notes are to span the width of the entire table in a spanned cell, they may be too spread out across the page. This can cause problems when printing: if the text in the spanned cell goes outside of the page area, the text will be printed on different pages. This frequently happens with large tables. Prior to submitting excel files for migration to Production, please ensure that your files are printer-friendly.

If you are planning to develop an application that makes use of the Excel creator functionality you must use the implementation that currently exists on the NCES website. Please contact xxxxxxx for details.

[Section: 2.3 - Policies | Contents]

2.3.6 - PDF Specifications

All IES / NCES publications going on the website must be submitted as a PDF file (at a minimum). Once a publication has been finalized and is ready for release, a PDF file needs to be created specifically for the IES / NCES website in order to meet our standards and requirements. This PDF should be made directly from the authoring application used (Microsoft Word, or other desktop publishing software). These instructions provide basic technical instructions for users of Adobe Acrobat 6 and Microsoft Word (for more in-depth instructions consult your particular application's manual or help menus). Information for working with alternative authoring applications is given when possible.

- **Creating PDFs** - There are a couple of steps that must be taken prior to creating the PDF.
    1. When your document has been created in MSWord, you must change the printer driver to Adobe PDF. If this printer driver is not selected, fonts may not embed correctly. To select the Adobe PDF print driver, choose "File>Print" then change "Name" to "Adobe PDF" then click "cancel". NOTE: Upon selection of the "Adobe PDF" print driver your document text may reflow, so you will want to proof your document at this time and adjust accordingly.
    2. It is essential that the correct Acrobat Distiller settings are used to create a file as small in size as possible that has the fonts embedded. (See examples of screen shots showing the preferred Distiller settings as well as full text of PDF standards.) Use the appropriate method for changing the distiller settings based on which way you are going to create the PDF:
        1. Exporting PDF directly: set up within MSWord or other authoring application (in MSWord choose "Acrobat > Change Conversion Settings").
        2. Creating "prn" or "ps" file: set up within Acrobat Distiller program ("Settings>Edit Adobe PDF Settings").

With the necessary adjustments made, as outlined above, the PDF can now be created by one of two ways:

3. Exporting the file to PDF directly from MSWord or another authoring application (in MSWord choose "Acrobat > Convert to PDF").
4. Creating a "prn" (printer) file or a "ps" (postscript) file; then Distilling it with Acrobat Distiller program ("File > Open"). Note: "prn" files are created in Word by choosing "File > Print" make sure "Name: Adobe PDF" is selected, check box "print to file", then click "ok" ("ps" files are created in PageMaker, InDesign, or Quark through the print dialog box).

- **Formatting PDFs** - IES requires that all PDFs be formatted in the following manner.
- **Document Properties** - The PDFs should be set up in the following way (by choosing "File > Document Properties")
    - Description: Fill in the four fields: "Title, Author, Subject, Keywords". This becomes searchable text for a user coming to our site.
    - Fonts: Check here to make sure all fonts are embedded. Next to each font listed there should be the words "Embedded" or "Embedded Subset". If all fonts are not embedded the PDF will not be readable by other users and the PDF file must be recreated at this point (see the troubleshooting section below for more information).
    - Initial View: Set "Show: Bookmarks Panel and Page", "Page layout: Default" and "Magnification: Default". Also check here to make sure that "Opens to: Page number:" is set to the initial page of the document.
    - Security: Set "Security Method" to "No Security".
- **File Name** - If an official publication, the file must be named using its IES / NCES publication number (with no dashes). For example, "A Profile of the American High School Sophomore in 2002," has a publication number NCES 2005-338; so the file name for the PDF is "2005338.pdf". This full file name is what must be entered as the file name for all Publications & Products Search entries (this includes the extension .pdf). If the file is not a publication and doesn't have a publication number, make the name short and simple (and with no dashes). In cases when it is necessary to issue revised reports, and those minor revisions are incorporated into a new PDF file for a web release those publications must carry the original number followed by "rev" (e.g. 2005338rev.pdf).
- **File Size** - PDFs should be kept under 1 Mb in size whenever possible. If a PDF is larger than 1 Mb, then in addition to submitting a PDF of the entire document, you must provide multiple PDF files that subdivide the document into logical units. You should divide the document into as few units as possible so that each is smaller than a megabyte. Using the publication from above, 2005338, as an example, the divided PDF should be named 2005338_1.pdf and 2005338_2.pdf. Do not use dashes in the file name.
- **Page Numbering** - Pages of the PDF must have the same numbering as the pages of the document. For instance, you can specify different styles to groups of pages (e.g., i, ii, iii... or 1, 2, 3... or A-1, A-2, A-3...). To set the page numbers, go to the "Pages" tab of the navigation pane and choose "Options: Number Pages": here

you can specify page range and number style. If pages do not have numbers, such as the cover of a publication, it should be labeled with the term "cover" or should use a sequence such as a, b... The final PDF product should have a page numbering sequence identical to the hard copy of the document:

- cover (1 of 124)
- a (2 of 124)
- i (3 of 124)
- ii (4 of 124)
- iii (5 of 124)
- 1 (6 of 124)
- 2 (7 of 124)
- A-1 (117 of 124)

This is necessary so the pages of a PDF file match the pages of the printed document to make it easier for users to navigate.

- **Covers and Mailers** - Back covers and reproductions of mailers should **not** be included as part of the PDF file.
- **Bookmarks** - Bookmarks must be created for all publications that are more than a couple of pages. A good general rule is to have the bookmarks match the Table of Contents of the publication. Bookmarks are created by choosing "File > Add Bookmark". Make sure all nested bookmarks are expanded (all bookmarks are visible), prior to saving the PDF.
- **Hyperlinks** - You are not required to activate any external web links in your document. If you do create links to web pages that are external to the IES / NCES website then you must use an exit page to comply with IES / NCES standards on External Links.

  Accessibility - PDFs created for the IES website should **not** be created with "tags" for accessibility. This creates a file that is too large for general use. IES provides users with information on obtaining free software for people using screen-reading software (see http://www.adobe.com/support/downloads/detail.jsp?hexID=88de). This software provided by Adobe creates tagged versions of PDF files.

  However, if your PDF file is a scanned image file (as opposed to a text document file or a file created using ocr text recognition software) you will need to add a description of the file that lists both phone and e-mail contact information via "Document Properties > Description", should the user seek additional help with the file. You must also add this as an attribute in the html "a href" tag.

  Finally, it is important to note that this should not be regarded as an alternative way to prepare PDF files for web distribution and should only be used as a last resort in the event that the original text file is not available and scanning a hardcopy would be impractical or impossible. Furthermore, there must actually be

a person available to respond to the phone or e-mail readily; otherwise the test for accessibility may not be met.

Finalizing the File - When the file is complete it must be minimized and formatted to be read by older versions of Acrobat. To do this, choose "Advanced > PDF Optimizer", select "Compatible with: Acrobat 4.0 and later" and then select the "Fonts" tab. Make sure all fonts are listed in the "Embedded fonts" list. Move any fonts listed in the "Fonts to unembed" column to the "Embedded fonts" column and then click "Ok" to save your file. To check that this step has been done correctly choose "File > Document Properties" and within the "Description" pane: "PDF Version" should read "1.4 (Acrobat 5.x)" and "Fast Web View" should read "Yes." Also make sure all fonts are still embedded. If any further changes are made to the PDF, you must repeat this entire finalization step to ensure that it is still compatible with older versions of Acrobat.

- **Troubleshooting** - Below are a few common issues that may arise:
    - **Font Embedding** - If fonts are not embedding check the following:
        1. Make sure the printer description "Name" is set to "Adobe PDF."
        2. In the Acrobat Distiller settings, under the "Fonts" tab, make sure there are no fonts listed in the field "Never Embed".
        3. Make sure fonts are loaded correctly on your computer.
    - **Text Formatting Changes** - Additional information from Adobe on formatting:
      "When you create a document, the page layout options and available fonts are determined by the default printer driver or by the target printer driver selected in the application. Changing to a different printer driver affects how text appears and prints in a document. If the original document wasn't created with Adobe PDF printer or Acrobat Distiller as the default printer, the text in any PDF document you create can reflow unexpectedly."
    - **Image Clarity** - The resolution of any images in the publication will be reduced during the distilling process. If images in your publication are unreadable in the web PDF you may have to distill those pages with less compression. This can be done by changing some of your Acrobat Distiller settings: Under the "Advance" tab, check the box "Save original JPEG image in PDF if possible". If this doesn't resolve the problem, go to the "Image" tab and increase "Downsample" pixels per inch (i.e., from 72 to 150ppi). This will create a larger file size, and so must be done only when essential for readability.

[Section: 2.3 - Policies | Contents]

2.3.7 - Home Page Data Snapshots

Home page Data Snapshots that are to be used for the Data Snapshots conform to the same specifications. Images are 150 x 110 pixels. They are typically between 6k and 11k in size. They are also generally prepared as .gif files. The year of the data appears on the

graphic as well as other essential characteristics to make it more or less a stand-alone piece of information.

[Section: 2.3 - Policies | Contents]

2.3.8 - Data Products

As required by the NCES Statistical Standard 4-2-12, before data users may gain access to Public-use data files through the NCES website, they must first agree that they will not use the data to attempt to identify any individual whose data is contained in the file. A standard pop-up page containing a "Data Usage Agreement" must be added before users can access any data file.

Below is an example code on how to trigger the popup disclaimer:

SAS data file (version 9)
All you need to do is copy and modify the file path and the link description above to match your particular data file. Below is a copy of the approved NCES data usage agreement:
NCES DATA USAGE AGREEMENT

Under law, public use data collected and distributed by the National Center for Education Statistics (NCES) may be used only for statistical purposes. Any effort to determine the identity of any reported case by public-use data users is prohibited by law. Violations are subject to Class E felony charges of a fine up to $250,000 and/or a prison term up to 5 years.

NCES does all it can to assure that the identity of data subjects cannot be disclosed. All direct identifiers, as well as any characteristics that might lead to identification, are omitted or modified in the dataset to protect the true characteristics of individual cases. Any intentional identification or disclosure of a person or institution violates the assurances of confidentiality given to the providers of the information. Therefore, users shall:

Use the data in any dataset for statistical purposes only.

Make no use of the identity of any person or institution discovered inadvertently, and advise NCES of any such discovery.

Not link any dataset with individually identifiable data from other NCES or non-NCES datasets. To proceed you must signify your agreement to comply with the above-stated statutorily based requirements. This window will close and you can now download the file.

I agree to the terms above.

I do not agree. Close window.

2.4 - SQL Server Policies and Procedures

This section covers the policies and procedures that apply to the access, creation and migration of SQL Server databases in IES servers. Ensure that your database design follows the necessary design guidelines and that your applications adhere to the required IES database access standards BEFORE submitting databases to IES Support.

2.4.1 - Support / Developer Responsibilities

The IES Internet Support team will provide a functioning database development environment, including access to development database servers running SQL Server 2005 via a VPN connection. Actual database development will be done by the developer with assistance from the Support Team as outlined in the following table. Special arrangements can be made if particular circumstances prevent this schedule or responsibilities from being applied.

	Developers	IES Internet Support
Development		
- Create Database		X
- Populate Database (*see note below*)	X	X
- Create Objects	X	
- Modify Objects	X	
- Security Admin	X	
Production		
- Create Database		X
- Populate Database		X
- Create Objects		X
- Modify Objects		X
- Security Admin		X
Transfers		
- Transfer from Development to Production		X
- Transfer from Production to Development		X

Note: IES Internet Support will only restore an initial database. Subsequent changes will be made directly by developers. Any actions that fall under the responsibility of the IES Internet Support Team need to be requested through the appropriate mechanisms on the IES Members Site (http://members.nces.ed.gov) by an organization's designated Admin.

[Section: 2.4 - SQL Server Policies and Procedures | Contents]

2.4.2 - Connecting to Development Databases using SQL 2005 Management Studio

You can connect to the IES/NCES development SQL servers through the IES/NCES Terminal Server through Firepass (you can also connect to the development SQL servers through the SSL VPN connection after connecting to Firepass). To connect to a database on xxxxxxxxxxx, xxxxxxxxxxx, xxxxxxxxxxx, xxxxxxxxxxx, xxxxxxxxxxx, xxxxxxxxxxx, or xxxxxxxxxxx, open the Management Studio and in the Connect to Server dialog box, enter the following:

- Server Type: Database Engine
- Server Name: xxxxxxxxxxx
- Authentication: SQL Server Authentication
- Login: jdoe
- Password: **********

If you would like to save this connection, right-click the server name in the left pane and select Register and add the server to the desired group. You should see a green arrow next to the newly added database server indicating a connection. Connect to your assigned database(s).

Server Name	Purpose	IP Address
xxxxxxxxxxx	Dissemination Development	xxx.xxx.xxx.xxx
xxxxxxxxxxx	NAEP Development	xxx.xxx.xxx.xxx
xxxxxxxxxxx	OPE Development	xxx.xxx.xxx.xxx
xxxxxxxxxxx	Dissemination Development	xxx.xxx.xxx.xxx
xxxxxxxxxxx	GIS Development	xxx.xxx.xxx.xxx
xxxxxxxxxxx	Survey Collection Development	xxx.xxx.xxx.xxx
xxxxxxxxxxx	Dissemination Development	xxx.xxx.xxx.xxx

Note: For best compatibility please upgrade your SQL tools to SQL 2005 Service Pack 1.

[Section: 2.4 - SQL Server Policies and Procedures | Contents]

2.4.3 - Creating and Delivering New Databases

IES/NCES databases can be created in one of two ways:

1. **An empty database**
   Ideally, empty databases should be populated by the developer using the SQL Server tools SQL Management Studio via Firepass.
2. **Restore of a SQL Server 2005 backup file**
   Backup files need to be placed in the \\ xxxxxxxxxxx \NewDB share. IES Internet Support will restore the backup file.

You must include the following information in any database creation request:

- The name of the database.
- The approximate size of the database.
- The database creation method.
- The database delivery method.
- The names of and the permissions for the people who will access the database, including database object level permissions required by the IIS anonymous user account (xxxx).

Note: All new databases must have an accompanying schema document. The schema should list table layout, dependencies, and version as a minimum. Any structural changes to a database must be accompanied by a revised electronic version of the schema with a matching version table update.

[Section: 2.4 - SQL Server Policies and Procedures | Contents]

2.4.4 - Updating Database Objects

When changes are made to scriptable Stored Procedures, Views, User-Defined Functions or other such database objects (not including tables) in development and those changes need to be moved to production please provide IES Internet Support with a script to alter the object instead of requesting that the object be copied. If the object will be dropped and recreated then please include the GRANT EXECUTE commands for the appropriate xxxxxxxxxxx accounts. All new tables must be denoted in the request with *NEW* (see below for details) and all other objects (SPs, UDFs, etc.) will require an alter or drop/create script for changes to be updated on production.

All database updates using SQL scripts can be requested through the members site. To request that a script be run, select *Script/DLL Request* from the *Request Type* and then select Run Script. A form will then allow you to select and give the appropriate information that pertains to the script, including script name, purpose of the script, and which database the script will be run against. The share \\ xxxxxxxxxx \SQLScript contains two folders for depositing requested scripts. The *Production* folder is used for all updates to the production database. All users have add permission to the SQLScript share and can deposit scripts in the correct subfolder when needed. The *Development* folder is a legacy folder that is used for all development database scripts for legacy applications and special cases only. Generally, scripts pertaining to development databases need to be run directly by the developer.

When multiple scripts need to be executed on the same SQL server AND database then they should all be listed in the same request. Otherwise, a separate request must be submitted for each server and database combination.

[Section: 2.4 - SQL Server Policies and Procedures | Contents]

2.4.5 - Transfers Between Development and Production

Note: Please include all the following information in your request. Failure to do so may result in your requests being delayed or rejected!

You can request that data (a table) or an entire database be transferred from Development to Production or from Production to Development. To request a database or table transfer, go to the members site and select **Make Request** from the Admin Tools box. Choose **Database Request** as the requested request type and **Transfer Database** for Request Details you will then need to complete the Web Request Checklist that appears in the pop-up window. Once you complete the Checklist proceed by selecting the desired database to be transferred, and check the box after checking the database precautions. Enter transfer details and hit **Submit**. On the database transfer form, specify all information required to have the database transferred. This information (if applicable) must include:

- Structure changes made to table(s).
- Object updates and dependencies.
- Any required stored procedures.
- Whether transferred data will be appended or overwritten.
- Whether a table is new (please denote with *NEW* in request form).
- Specific database object level permissions required by the IIS anonymous user account (xxxxxx).

Note: Ownership of any object not already owned by 'dbo' needs to be changed to 'dbo' before it will be moved into production!

[Section: 2.4 - SQL Server Policies and Procedures | Contents]

2.4.6 - Database Permission Levels

There are four levels of database access permissions defined by IES:

Read-Only

Read-only access will allow the developer to query tables. In other words, the developer can execute SELECT statements.

Read/Write

This gives the developer all the privileges of Read-Only access and also allows writing of new data. This is the equivalent to INSERT and UPDATE statements.

Read/Write/Modify

All the privileges of Read/Write plus modifying database objects themselves. Allows adding/removing columns, changing data types, etc. Equivalent to ALTER TABLE, CREATE TABLE, DROP TABLE, etc. This level of access will allow developers to create objects under a different user account. For example: user jdoe can create a table called jdoe.tablename or dbo.tablename.

DBO

Full privileges in the database. This account should only be used for troubleshooting, e.g., to change ownership of a table that was accidentally created under a different username. Database development should be done at the Read/Write/Modify access level. *A maximum of two DBO level accounts are permitted per database*.

Note: For a full explanation of privileges associated with each access level consult SQL Server Books Online.

[Section: 2.4 - SQL Server Policies and Procedures | Contents]

2.4.7 - Bulk Inserts for Loading Data

If a developer needs to perform a bulk insert to load data please contact IES Internet Support by phone/email and make a request to have the database recovery model temporarily changed from 'Full' to 'Simple'. This will insure that the bulk insert operation will not be fully logged, thus avoiding transaction logs that grow and use up an inordinate amount of disk space.

[Section: 2.4 - SQL Server Policies and Procedures | Contents]

2.5 - Contacts and Resources

2.5.1 - IES Web Liaisons

IES has designated web liaisons for each of its Centers plus the two Deputy Directors' Offices. These web liaisons are responsible for the submission, review, and approval of web content for their respective areas, and for keeping their website content current and accurate. Submissions include publications, grant announcements, award announcements, and all other items of interest to the public. Liaisons should also submit calendar events and suggested What's New items. Ideally, this information should be coordinated by the DDAP liaison for all of IES. If the requested material is not forthcoming from the individual Centers, the DDAP will be required to supply it. Information should be garnered from all material that passes through the Communications Office (DDAP) of IES. Additionally, a weekly e-mail reminder for new web content will be sent to all IES web liaisons.

IES web liaisons should prepare all work as a Word file, and submit all images and PDF files that are needed for a submission before submitting a request to the lead IES web coordinator to post said material on the IES website. Please do not assume that the IES web coordinator already has the images and PDF files related to your submission. All publications and documents submitted as PDF files must meet published IES web standards for PDFs (Standard 3.8) in addition to Department of Education accessibility

requirements (Standard 1.2), etc. All web work that is done for these areas will be posted to the website by the IES web coordinator and will follow all IES standards and procedures. Web liaisons must also be aware of the standards, to facilitate the maintenance and organization of the IES website. Among other responsibilities, the liaisons are also required to plan for and attend any web kick-off meetings (Standard 3.7) for new initiatives that are within their area of responsibility.

Additionally, web liaisons, or their designated alternates, will attend monthly web meetings, the 1st Tuesday of the month at 2:30 p.m. at Cap Place. These meetings serve to discuss upcoming web activities, suggestions for new web applications, standards, and other issues. The web liaisons are responsible for sharing this information with their Center/Office and bringing issues raised by their groups to future meetings. The liaisons serve as the main conduit for passing and receiving the information that is integral to the success of the IES website. The IES web liaisons are:

xxxxxx

Please use the IES Staff List for up-to-date contact details.

[Section: 2.5 - Contacts and Resources | Contents]

2.5.2 - NCES Web Publishers / Liaisons

NCES has designated web publishers for each of its survey / program areas (currently 42 areas). These web publishers are responsible for the review and approval of web content for their respective areas and for keeping their websites up-to-date and current in regard to the information that is being presented. They should be reviewing and approving all work done prior to a request being submitted (typically by a contractor) to the NCES webmaster for final publication to the NCES website. Among other responsibilities they are also required to plan for and attend any web kick-off meetings for their program. The vast majority of the web work that is done for these program areas is handled by outside contractors who must follow all policies, guidelines, standards and procedures. Web publishers must also be aware of the standards, as it will greatly help them in reviewing work done by their developers.

NCES has also designated web liaisons and alternates for all four of its divisions. These web liaisons have full administrative rights comparable to the admin designees for NCES contractors. However, their primary responsibility is to be part of and to attend the bi-weekly NCES web team meetings. These meetings serve to discuss new web activities, standards, and other issues. The web liaison should then be sharing this information with their division and bringing issues raised by their division to future meetings. They serve as the main conduit for the passing and receiving of information that is integral to the success of the NCES website.

A list of NCES web publishers and liaisons is available (Microsoft Word file).

[Section: 2.5 - Contacts and Resources | Contents]

2.5.3 - Usage Reports

IES uses Webtrends to generate web usage statistics. To view statistics on site traffic and other website issues please visit xxxxxx.

[Section: 2.5 - Contacts and Resources | Contents]

2.5.4 - Engineering / Network Support

IES Engineering / Network Support can be reached by contacting:

- xxxxxx

[Section: 2.5 - Contacts and Resources | Contents]

3. Application Guidelines

3.1 - SQL Server Database Design

These guidelines cover database design for applications. If you have questions regarding sound SQL Server database design IES Internet Support can provide examples.

3.1.1 - General Guidelines

- Good database design starts with the right primary key. **All tables in all databases need to have primary keys defined.** Choosing a primary key is one of the most important steps in good database design. A primary key is a table column that serves a special purpose. Each database table needs a primary key because it ensures row-level accessibility. If you choose an appropriate primary key, you can specify a primary key value, which lets you query each table row individually and modify each row without altering other rows in the same table. The values that compose a primary key column are unique; no two values are the same. Each table has one and only one primary key, which can consist of one or many columns. A concatenated primary key comprises two or more columns. In a single table, you might find several columns, or groups of columns, that might serve as a primary key and are called candidate keys. A table can have more than one candidate key, but only one candidate key can become the primary key for that table. Additionally, this will allow us to replicate the tables for disaster recovery. **Every table must have a primary key or your database request will be rejected.**
- Databases should have a list of any indexes that are required. It is the developer's responsibility to determine the optimal number of indexes for best performance, as there is a trade-off between re-building indexes (on INSERT, UPDATE, DELETE statements) and the speed gains from SELECT...WHERE queries. For performance reasons, all tables should have at least a clustered index defined (by

default, SQL Server will define a clustered index whenever a primary key is created.)

- Foreign keys should always be used to enforce logical links between entities in tables. This helps ensure data integrity.
- Use stored procedures to execute your SQL queries. This reduces the chance of erroneous or malicious SQL being executed and increases performance. If dynamic SQL is needed, consider using *sp_executesql*. Avoid building SQL queries directly from user-input. Note that you can return more than one result set from a stored procedure, if necessary; this is more efficient than running multiple separate database calls.
- Adhere to suggested best practices, for example:
    - Use data types appropriate to the data being stored. Do not use varchar for integers, avoid using nvarchar, ntext, nchar, and test data types unless necessary, limit the number of columns per table, etc.)
    - Use SCOPE_IDENTITY() to obtain the ID of a newly inserted identity row. **Do not use @@IDENTITY** as this is not transaction specific and is therefore unpredictable!
    - Use SET NOCOUNT ON as a default in your stored procedures, unless the affected rowcount is needed. This will significantly reduce network traffic from your database server.
    - Avoid using CURSORs and temporary tables unless absolutely necessary as these are intensive processes that may affect the performance of the database server.

Additional reading suggestion: SQL Server Best Practices from sqlteam.com.

[Section: 3.1 - SQL Server Database Design | Contents]

3.1.2 - SQL Naming Conventions

IES requires that you enforce the following set of syntax and style conventions for all database objects and T-SQL in your projects:

- All database objects, including tables, user stored procedures, views and user-defined functions must be named with no underscores in the name unless used as part of the prefix or suffix and using "Camel case" (capitals for the first letter of each identifiers and lowercase for each subsequent word). In additional, the following prefixes MUST be used:
    1. **usp** or **usp_** for stored procedures, for example, uspCalcReport, uspPrintError, usp_GetSchoolInfo
    2. **v** for views, for example vContactInfo, vKidsDetail, vLibraryList
    3. **ufn** for user-defined functions, for example ufnDropOutRate, ufnStateName, ufnGetList

Tables and other objects may be prefixed but this is not required.
Note: An exception is granted for database objects created by ASP.NET 2.0+ (e.g.

those created for the membership and role management modules) as these follow their own naming conventions such as using "aspnet_" as a prefix.

- **Never prefix stored procedures with "sp_"** as this is the default used by SQL Server for stored procedures in the master database.
- Capitalize all keywords (e.g. SELECT, WHERE, IN, etc.) and system functions (e.g. GETDATE(), SCOPE_IDENTITY(), etc.), while keeping other words lowercase or as the same case as the original object.
- Use a new line for each new query. Use a new line and indent for subqueries and complex clauses (e.g. WHERE, ORDER BY).
- Include a comment section in each stored procedure, view or trigger that includes standard information such as functional description, date, etc.

[Section: 3.1 - SQL Server Database Design | Contents]

3.1.3 - SQL CLR Stored Procedures (SQL Server 2005)

Developers have the option of creating stored procedures in managed code for .NET 2.0+. This is allowed at IES as long as each assembly can be deployed with PERMISSION_SET = SAFE. Note that this means that these stored procedures must be type-safe and single-threaded, amongst other requirements.

All source code along with pre-compiled binaries (DLLs) must be provided for any SQL CLR stored procedures to be deployed. **No SQL CLR stored procedures will be deployed unless accompanied by the corresponding source code.** This includes the .lproject and solution files (from Visual Studio 2005, for example) used to build the binaries from the source code, as well as any assemblies referenced by the source code.

SQL Server 2005 memory allocation for the SQL CLR on IES servers will **not** be increased as this may reduce the availability of the RDBMS of the database server. This may be an issue for 32-bit installations (64-bit installations should have enough Virtual Address Space) so be aware of the database server to which you are deploying when you design and stress test your stored procedure.

[Section: 3.1 - SQL Server Database Design | Contents]

3.2 - SQL Server Database Access for Applications

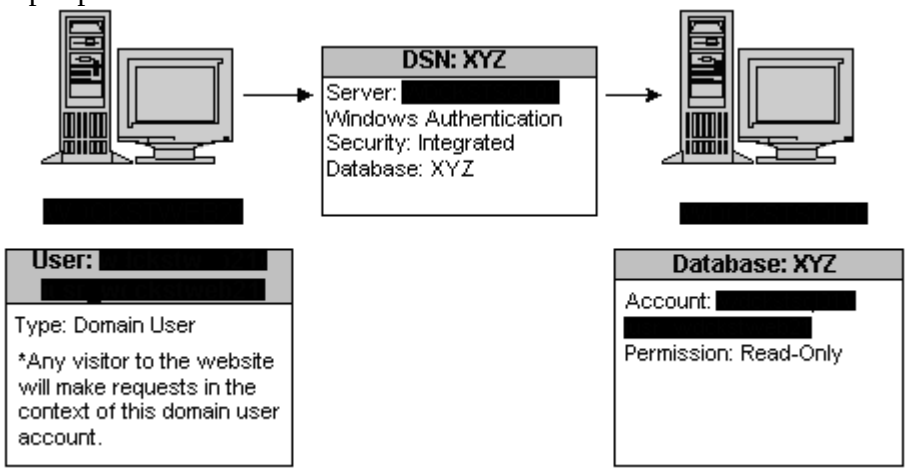
All your applications should access the SQL Server database server consistently. All ADO.NET 2.0+ enabled applications should use a trusted connection (integrated authentication). DSNs must be used for all other applications.

3.2.1 - ADO.NET 2.0+ Connection Strings

All ADO.NET connection strings **must** use a trusted connection (integrated authentication) **and** be stored in This content removed for security reasons.

3.2.2 - DSN Connection Strings

All other database access will take place using System DSNs. In order to facilitate connection to the project database a request needs to be included as part of the Database Creation Request specifying the DSN name and level of access (read-only or read/write). By default, all DSNs will have the same name as the database to which they refer, without any trailing suffixes such as *_dev* or *_prod*. Also list any stored procedures that need to be accessed via the DSN so that the anonymous webuser account can be given proper permission to execute them.



This content removed for security reasons.

3.3 - Application Coding Conventions

These conventions govern the appearance and organization of web site files, source code and data objects - code syntax, style, naming conventions, file and project organization, etc. They exist primarily to improve the manageability of the application rather than the function of the code. Coding conventions should be laid down as early as possible and always enforced throughout a project lifespan.

3.3.1 - C# / VB.NET 2.0+

Follow a standard set of naming and coding conventions for all your work. Microsoft has published material online through MSDN as well as books (recommended: *Framework Design Guidelines* by Krzysztof Cwalina and Brad Adams, Addison-Wesley. ISBN 0-321-24675-6.). A popular naming convention for C# is the Philips Medical Systems' Coding Standard, which is freely available. The following basic conventions have also been established for IES:

- Import only the namespaces you use in any source code file (via the *using* keyword for C# or the *Imports* keyword in VB.NET). This makes the dependencies and references of a particular piece of code easier to interpret. (Note that by default Visual Studio will import a default set of namespaces - remove those that are not used.)
- Use the Visual Studio 2005 defaults for tabs and spaces for indentation and alignment of code. If you do change the default, ensure that all developers in your team use the same settings, otherwise this will affect code readability and source control mechanics.
- Never use reserved words or overly simple words (e.g. Message) when naming types or variables. Never name an object with the same name as its underlying type (e.g. do not name a string "string").
- Use the I prefix when creating Interfaces (e.g. IDisposable). Do not use prefixes for other type names.
- Always avoid hard-coding default or specific values that may change in future. As a minimum use private variables or constants, or expose the value as a configuration application setting. Resource files or database tables can also be used to store these values.
- [C# only] Use XML comments (enter three forward-slashes to use IntelliSense in Visual Studio) to mark exposed class library types, methods and properties. If time is limited, comment only the most important or complicated methods.

[Section: 3.3 - Application Coding Conventions | Contents]

3.3.2 - ASP.NET 2.0+

The following IES conventions must be followed when writing ASP.NET:

- You must use Default.aspx as your application default document (page).
- Always place code in a separate file to the front end (i.e. Default.aspx and Default.aspx.cs will make up the Default Page.)
- Use prefixes for all objects that are server-side controls, including user controls, custom controls and HTML elements. (e.g. use ddlContact for a dropdown list.)
- Enclose all ASP.NET (and HTML) tag attributes in double quotes.
- Whenever practical, output valid XHTML 1.0 Transitional. Default ASP.NET 2.0+ controls will do this, so you should ensure that your HTML also does so.
- Use C# / VB.NET comments in your front-end files (*.aspx/*.ascx) rather than HTML comments unless they need to be visibly output. (Use the Ctrl-K-C shortcut sequence in Visual Studio.)

[Section: 3.3 - Application Coding Conventions | Contents]

3.3.3 - Classic ASP

Server-side classic ASP include files are used throughout the IES / NCES websites to encapsulate common code, such as the header and footer. Two rules apply to the use of these files:

1. Do NOT give include files an .inc extension - files with the .inc extension are not mapped to anything in a default IIS installation so if a request is made for one of these files, the source code is returned as if it were a plain text file. When centralizing your code, give all include files an .asp extension and put them in the inc subdirectory.
2. Do NOT use the "../" format in relative links (e.g. "../", "../../") to reference include files.

This content removed for security reasons.

[Section: 3.3 - Application Coding Conventions | Contents]

3.3.4 - JavaScript

JavaScript should be placed inside one or more *.js files unless it is used only in a localized scope and is small, or it is generated by dynamic application code. Generally, it is better to place JavaScript in an external js file for maintainability. Older browsers that don't support JavaScript will also ignore the code in external files.

If you are including JavaScript in a page, use the following syntax:

```
<script type="text/javascript">
<!--
//-->
</script>
```

The *type* attribute should be included for best HTML compliance (do not use the *lang* or *language* attributes).
Most common naming conventions for JavaScript are adapted from Sun Microsystems' *Code Conventions for the Java Programming Language*. The basic rules of these conventions include:

- Non-global variables and functions should be named using alphanumeric characters and should always begin with a lowercase letter.
- Constructor functions should always begin with a capital letter.
- Global variables ('constants') should be wholly written in capitals.

For further reading, try Code Conventions for the JavaScript Programming Language

[Section: 3.3 - Application Coding Conventions | Contents]

3.4 - Application Development Guidelines

Development guidelines covers functional design decisions and coding practices that will likely affect both the performance and manageability of an application (sometimes in opposite ways). They are typically very specific to a particular technology or software language and must be considered relative to other project requirements, such as timeframe and budget as well as the server / network environment.

3.4.1 - C# / VB.NET 2.0+

There are some simple rules that can be followed from the beginning of all your projects that can help ensure the quality of your .NET code.

- Always leverage the USING block (C#: *using { }*; VB.NET: *Using...End Using*) on types that implement IDisposable (such as SqlDataReader). This is especially important for your data access code to help ensure all connections are closed in a timely manner and prevent excessive memory use.
- Use properties to expose a type's members. Do not make member types public.
- Use generic types to help ensure type-safety. The System.Collections.Generic namespace contains useful generic collection types.
- Do not use *throw ex;* to re-throw an exception - this will throw a new instance of the exception. Use a simple *throw;* statement instead. (This syntax is written in C# but similarly for VB.NET use *Throw* instead of *Throw Ex*.)
- Do not use deprecated types and methods from .NET 1.x Framework versions (e.g. ApplicationException).
- Always use language-specific base types (do not use the generic .NET Framework types). For example, use the C# type "string" in C# rather than System.String.

There are *many* more guidelines, especially concerning object-oriented design principles (inheritance, using abstract classes versus interfaces, etc.). These tend to be more important for larger projects that have a lot of code re-use and will depend on the application requirements and architecture. For such projects, a team lead or technical manager should identify important design guidelines to help ensure a consistent and efficient approach to your application development.

Additional reading suggestion: *Framework Design Guidelines* by Krzysztof Cwalina and Brad Adams, Addison-Wesley. ISBN 0-321-24675-6.

[Section: 3.4 - Application Development Guidelines | Contents]

3.4.2 - ASP.NET 2.0+

ASP.NET 2.0+ web applications are very easy to create thanks to Visual Studio 2005+. However, underneath the hood they are complex and become potentially difficult to manage and debug. A good understanding of ASP.NET basics (such as the ViewState, Page lifecycle and event handling) is recommended before creating complex applications. The additional guidelines provided below may also help ensure your web application is easy to maintain or update, performs well and is secure.

- **You MUST implement a global exception handler and error page** (this may be set in *web.config*). This ensures that in the event of an unhandled exception the stack trace and other debug information is never sent to the end user, and provides a single point for your application's error logging code. You cannot assume that your application will never throw an unhandled exception.
- Implement a page framework / hierarchy that encourages code re-use in your web application. For example:
    - use Master Pages to implement common page templates. There are especially useful for shared HTML layout sections such as the <head> section. Well-designed Master Pages may even be used with multiple applications.
    - use User Controls to encapsulate complex or re-used sections of screens. Or use custom controls if the functionality needs to be heavily customized or shared between many applications.
    - use base classes for your System.Web.UI.Page, System.Web.UI.MasterPage and System.Web.UI.UserControl. Application-wide properties and methods can be readily shared using base classes.
- **Do not use the *Application* nor *Session* objects** to store data as this does not work in web farm or load balancing scenarios, as used at IES. Refer to the section on Load Balancing and Server Affinity for more details.
- Manage your Page's ViewState. Disable the ViewState for controls that don't need it. For complex controls, such as the GridView, it may be more efficient to re-bind data by querying the database again or maintaining a Cache item, than using the ViewState. Ensure that EnableViewStateMac is set to true in your application for security reasons.
- Avoid ASP.NET 1.x controls in situations where ASP.NET 2.0+ controls exist (e.g. use the GridView instead of the DataGrid). ASP.NET 2.0+ output valid XHTML 1.0 Transitional and are more compatible with features from the .NET Framework 2.0+.
- Be aware of **all text boxes**! Ensure your application is validating input (by default, ASP.NET will throw a validation exception if any HTML or script is submitted) and always limit the text entry size of a text box using the html *maxlength* attribute. If practical, use selection elements (radio buttons, check boxes, dropdown lists, etc.) for user input instead. Also beware of query string input values as these can also be exploited by malicious users.
- Do not call *Page.DataBind()* as this will call the DataBind() method on every control on the page and make page lifecycle maintenance and debugging more difficult.
- Avoid Eval (DataBinder.Eval) where possible as this uses reflection to perform type casting (which will be slow). Explicitly cast types as necessary, or implement an ItemDataBound event handler in managed code.
- Minimize the use of server controls on large, complex pages. Use HTML equivalents or static text when possible. Server controls should be used only when post-back, server-side interaction is needed.

- When calling *Response.Redirect*, use the overloaded version of the method and specify *false* for the second argument, unless there is code after the call that must be executed. This avoids the overhead of throwing an unnecessary ThreadAbortException.

[Section: 3.4 - Application Development Guidelines | Contents]

3.4.3 - Classic ASP

Always use server-side include files to encapsulate common code. When doing so, you MUST follow the naming convention for include files.

ASP/COM applications potentially contain more memory leak problems than ASP.NET applications. Whenever you call Server.CreateObject, **make sure you close your object to ensure that memory is returned** to the application:

```
SET AppObject = Server.CreateObject("AppX.Widget")
AppObject.DoSomething()
SET AppObject = Nothing
```

Call Server.CreateObject (instead of just CreateObject) to ensure that any errors encountered by the component will be written to the event log. Using Server.CreateObject invokes the Microsoft Transaction Server (MTS) for the creation and handling of the object, which provides debugging information (although it may have performance disadvantages).

All standard ASP components are supported and may be used in web pages. Below is a description of some of the more useful components.

- **Ad Rotator Component** - Using this component, users will receive a different graphic each time they visit the page. It uses a text file to store the information about the different graphics. It is normally used for banner ads, but can just as easily be used for regular images.
- **Content Linking Component** - This is useful for pages that have a specific order. It can provide a "back button" and "forward button" capability, again using just a text file.
- **Sending e-mail** - We support sending e-mail from web pages (this feature cannot be entirely tested on xxxxxxxxxxx). The following code sends a message using ASP (the vbcrlf is used to insert a blank line in the e-mail message):

  ```
  <%
  MailFrom = "nobody@myisp.com"
  MailTo = "somebody@theirisp.com"
  MailSubject = "This is a subject line"
  MailBody = "This is a test." & vbcrlf & vbcrlf & "You may ignore it."
  set newobject = server.createobject("cdonts.newmail")
  ```

```
newobject.send MailFrom, MailTo, MailSubject, MailBody, 1
set newobject = nothing
%>
```

See Website Components for details on third-party components allowed.

In the event that an ASP application requires functionality that cannot be achieved with ASP alone, **ActiveX DLLs are supported for use on IES web servers**. Notification of the intended use of DLLs must be done during the kick-off stage for all projects. The DLLs must be designed to be registered under COM+, not the system via regsvr32. They should be written in Visual Basic or C++. In either case, DLLs must be submitted with a justification for their deployment; a short description of their functionality; and their **complete source code** including full documentation. DLLs submitted without source code and documentation will not be accepted.
All references to paths, file names, URLs, e-mail addresses, IP addresses, DSNs, references to specific databases or database objects (tables, views, stored procedures) or anything that is subject to change should not be hard coded as part of the DLL. Instead these values should be handled in the .asp code and passed to the component object. This will prevent the need to recompile DLLs in the event of a change to the website or server environment.

A revised copy of the source code with documentation changes must accompany any subsequent changes to these DLLs. As with web pages and databases, all DLLs will be installed in the IES development environment for evaluation before being deployed in production. Submit all DLLs by uploading them to the \\ xxxxxxxxxxx \newdll share. All developers have access to this share by default. This means that developers DO NOT need to request permission to that share.

Note: For new applications, ASP.NET 2.0 or 3.5 is the recommended technology of choice, and the .NET Framework will be able to accomplish any task that may be previously been performed by an ActiveX DLL. ASP applications will continue to be supported however.

[Section: 3.4 - Application Development Guidelines | Contents]

3.5 - Website Components

The IES websites incorporate a few third party components. In general, these are the ONLY third party components allowed and supported.

- Corda PopChart, Highwire 7
- SAFileUp 5.0.19
- ExcelWriter 5.5.3

For security, transparency, manageability and support reasons IES / NCES strongly discourages the use of all other proprietary components in any web-based applications it hosts. In cases where the developer feels this is unavoidable, the discussion of the use of

such proprietary components must first be officially requested as part of the required kick-off meeting and then cleared by the IES CITO and the Department of Education's OCIO since it will be residing on the Department's EDNET system. If this is not done it will not be allowed on any part of the IES / NCES website. Furthermore, a detailed description of the component's functionality must be submitted with a list of instances in the application that call the component along with a justification for that particular component.

3.5.1 - Graphing Component - Corda PopChart, Highwire

IES supports only one web graphing component, Corda PopChart, Highwire Version 7.2 (www.corda.com). This component can be used by any VBScript based web application running on our production or development environment. Several web applications have been written in VBScript for ASP pages on a Windows 2003 Server, to create graphs using Corda PopChart. An example can be found in the IES Student's Classroom Create a Graph site. We make our own modifications as necessary. All temporary graphs created by this component should be deleted nightly. As the Corda PopChart software does not support the deletion of temporary files, the IES Server Admin Team sets this up on the IIS web server. If you have any questions about this tool please contact the NCES webmaster. No other graphing tools will be permitted on the IES/NCES website.

This content removed for security reasons.

MIME types for the image formats:

- FLASH -- application/x-shockwave-flash
- JPEG -- image/jpeg
- PNG -- image/png
- SVG -- image/svg
- TIFF -- image/tiff
- PDF -- application/pdf
- EPS -- application/postscript
- EMF -- image/emf

Complete documentation for Corda PopChart 7 is available at
http://www.corda.com/corda-7-documentation.php
The Corda Free Builder 6.0 tool (free download) is a GUI used to design graphs for Corda PopChart by generating the necessary PCXML code used by the component.

[Section: 3.5 - Website Components | Contents]

3.5.2 - User File Uploads - SAFileUp

For IES ASP web applications (both for data analysis and for surveys) that potentially require the user to upload files IES has installed SaFileUpSE to help with this process. It makes use of a server-side control to implement file upload and download functions. It offers client-to-server-to-server HTTP file transfers as well as combined client and server

side resumability, which greatly enhances its security. FileUp handles potentially server crippling upload limitations concerning larger files. FileUpSE transmits files from a local hard disk to a server running Microsoft Internet Information Server (IIS). By using FileUpSE, file transfer sizes can reach 4 GB within an ASP environment. Files can be of any format, such as Word documents, images or plain text. If you are working on an application that might be in the need for file upload functionalities please contact IES support immediately so that you can incorporate this software into your application.

[Section: 3.5 - Website Components | Contents]

3.5.3 - Search Engine - Google Mini

IES / NCES uses the Google Mini search engine.

Generally, a search form only has to include a single variable called **q**. Google will search its catalog for any pages matching the text passed in q and will then respond with all matches in the collection. To restrict the results to specific areas of the website, use an additional variable **sitesearch** (for example, a search page under nces.ed.gov/nationsreportcard may not be interested in matching pages located in nces.ed.gov/surveys/sass). Nationsreportcard can be passed in the hidden **sitesearch** variable as *nces.ed.gov/nationsreportcard*.

Google supports several search specifications that can be set by passing variables with the search. Most of these are set on the server but some may be set manually by including them in the search form. The following variables are allowed:

- **q** - The actual query string the user enters. Usually a text field.
- **sitesearch** - Specifies a "virtual collection" such as nces.ed.gov/nationsreportcard. Usually hidden.

Example:
The following code produces a simple search form that prompts the user for a search string and returns only the matches that fall inside http://nces.ed.gov/nationsreportcard, displaying twenty hits at a time.

```
<form action="/search/" method="GET">
<input type=hidden name="output" value="xml_no_dtd">
<input type=hidden name="client" value="nces">
<input type=hidden name="site" value="nces">
<input type=hidden name="sitesearch" value="nces.ed.gov/nationsreportcard">
</form>
```

By request to the webmaster a special feature called 'Key Match' can be set up. A Key Match is an entry tied to specific keywords that ensure that a link is always featured prominently above standard hits. This will bypass the Google default search mechanism that brings up results based on the content of the page. For example, in using 'Key Match' if a user entered the term assessment it is probably more desirable to prominently feature a link to the Nation's Report Card home page instead of a link to a page of an old version

of the Education Quarterly. To request a Key Match simply send an e-mail to the webmaster with the desired link (e.g., http://nces.ed.gov/nationsreportcard) and the associated keywords (e.g., assessment, math, student, etc.)

Synonyms can also be set up to provide more help to the user. For example, a synonym can be set up so if the user enters the search term 'director' a result returned will say 'you could also try Whitehurst.'

For questions about the Google Mini appliance contact xxxxxxxx.

[Section: 3.5 - Website Components | Contents]

3.6 - State Management and Load Balancing

Dynamic applications make it necessary for certain information ("state") to be available to more than one page in the application. For example, a data analysis application requires a user to work through an application step-by-step. The information is stored and passed page-to-page and possibly server-to-server, transparently to the user. Several mechanisms exist to do this, such as cookies, and Session objects in ASP and ASP.NET.

3.6.1 - Cookies

There are two types of cookies, "session" cookies and persistent cookies. Both types allow for certain information, such as a session identifier, to be stored on a client computer, but under Federal guidelines **only "session" cookies (i.e. non-persistent) are allowed by IES**. However the use of persistent cookies may be allowed if:

- The site gives clear and conspicuous notice;
- There is a compelling need to gather the data on the site;
- Appropriate and publicly disclosed privacy safeguards exist for handling any information derived from the cookies; and
- The agency head gives personal approval for their use.

So-called "session" cookies are stored in the client's volatile memory (RAM) only and disappear when the web browser is closed. Persistent cookies, on the other hand, are stored on the client computer's hard disk where they remain until their expiration date, even after the web browser is closed. Both types of cookies are sent to the client in the same way, with the exception that persistent cookies are assigned an expiration date.

The following code is an example of a "session" cookie that is allowed by IES because it is only stored in the client computer's RAM but not written to its hard disk:

```
<%
response.cookies("CookieName")="Contents of cookie goes here."
%>
```

The following code is an example of a prohibited persistent cookie. The cookie is created the same way as a "session" cookie but in addition an expiration date is set, which causes the cookie to be written to the client computer's hard disk.

```
<%
response.cookies("CookieName")="Contents of cookie goes here."
response.cookies("CookieName").Expire=#December 31, 2038#
%>
```

[Section: 3.6 - State Management and Load Balancing | Contents]

3.6.2 - Load Balancing and Server Affinity

This content removed for security reasons.

[Section: 3.6 - State Management and Load Balancing | Contents]

3.7 - Application Deployment

General website content and ASP applications are simply copied into their target directories. For ASP.NET 2.0+ applications, the simplest deployment method is used.

3.7.1 - ASP.NET 2.0+

ASP.NET 2.0+ applications by default must be deployed by xxxxxx This content removed for security reasons.

.NET DLLs may not be installed in the GAC of IES servers. Putting them in the *bin* subdirectory of the application will be sufficient.

For web.config files, ensure that you provide the IES Support team with **production** versions of your web.config files if they differ from those used in development. You will NOT be allowed to modify files on production servers on-the-fly (you must submit requests) - therefore, to ensure your application is correctly configured you should provide production versions of each web.config file required by your application. This can be done easily be naming your file *web.config.prod*, for example and including a note to IES Support in your request.

[Section: 3.7 - Application Deployment | Contents]